OR YEAR BOOK *from* HOSPITAL TOPICS

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Foreword

Hospital Topics in December 1949 began publishing a section devoted to the interests of the operating room supervisor and her associates. Our aim has been to mirror the activities of the many monthly discussion groups of O. R. Supervisors now meeting around the country and disseminate information on new developments in surgical practice and apparatus. Ethicon Suture Laboratories, Inc. has financially sponsored the O. R. Section and made gifts of several thousand subscriptions to individual supervisors. The staff of Hospital Topics independently selects and prepares all material for the O. R. Section. The mention of any product in this section does not constitute an endorsement or recommendation. The publisher acknowledges the guidance of Carl W. Walter, M.D. and Dorothy Wysocki R.N., both of the surgical staff of the Peter Bent Brigham Hospital. We hope this first Yearbook proves useful. Suggestions and contributions to the O. R. Section are always most welcome.

Gordon Markell

Publisher

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Dangers In Surgical Suite Air Conditioning

By R. A. Phelps, Hospital Engineer

Air conditioning in the surgical suite may be a source of post-operative infection says the author and cites a recent case which baffled authorities

THE NEED for air conditioning, especially in the operating and anaesthetization rooms is generally recognized. The only known protection against possible explosions, where explosive anaesthetics are used, is the complete and thorough grounding of floors and equipment and the maintenance of temperatures from 75 to 80 degrees and humidity of 50% to 55%, which will reduce the possibility of static electric discharges. Only air conditioning equipment can maintain this control of temperature and humidity, however, it must be recognized that air conditioning may be extremely dangerous to the patient in these rooms.

Modern hospital construction provides walls and floors which are impervious and can be made clean and sanitary. All equipment used can be cleaned easily. The instruments used and the gloves and clothing of the personnel are thoroughly sterilized. Every known precaution is taken to protect the patient from infection. Then air conditioning injects into this sterile atmosphere a volume of moist air under pressure, which permeates every nook and corner and is forced deep into the open incisions of the patient. This

air may carry with it minute particles of dust which are highly contaminated. Nothing except the rubber gloves of the surgeon and the instruments he uses is as dangerous. The gloves and instruments are thoroughly sterilized, but what is done about this other danger?

An air conditioning unit consists of: an intake where the outside air is drawn in; a set of filters which are simply fine screens, to take out the dust and dirt from the incoming air; an air washer which further cleans the the air; refrigeration coils which coof the air if necessary; heating coils which raise the temperature when this is required; the impeller blades of the fan, which draw the air through the intake and force it into the discharge ducts; the humidifier which atomizes water into the discharge air to raise the humidity, if necessary; and the discharge duct with vanes, dampers and ports which conduct, control and discharge the air into the rooms.

None of this equipment is sterile. In fact, though the equipment may be reasonably clean when installed, it will soon become dirty whether it is in use or standing idle, and there is no way it can be cleaned.

From the perspective of the color TV camera, Dr. A. Earl Walker, neurologist-in-charge at Johns Hopkins Hospital, is shown using an "electro-encephalograph" on a patient after performing a craniotomy for epilepsy, during a color television demonstration sponsored by Smith, Kline & French Labs., at Clinical Session of A.M.A.

Assuming that the filters and air washers have cleaned the air, there are still two possible sources of contamination in the equipment. All machinery must be lubricated and some of the lubricating oil will be volatilized into the air stream. Far more dangerous is the water used in the washer and in the humidifier. The author knows of no installation where sterile oil or water is used, yet both are injected into the air being forced into the previously sterile atmosphere of the operating room. Still other dangers may exist in the air conditioning equipment.

Recent Case Cited

These dangers were forcefully brought to my attention during a recent inspection of a T.B. hospital, where sanitation and aseptic techniques were rigidly enforced. The staff was very proud of the hospital's record of practically no post operative infections.

A new air conditioning unit had been installed to serve the surgical suite, including operating rooms, anaesthetization room, sterilizing room, nurses' work room, and post operative ward. This suite and the air conditioning equipment room are located on the top floor of the building. The air intake is located in the exterior wall of the building, above the roof of the lower floors. As this hospital is a single building unit, it has an integral boiler house with a smoke stack extending above the roof over the operating suite. The air intake was placed as far away from this

stack as possible.

The intake duct and the housing for the air conditioning equipment were constructed of galvanized iron, but due to the fact that the discharge ducts were concealed in walls and ceiling, copper was used for these ducts, to give longer life, as it was thought the copper would not be corroded by the warm, moist air this duct would transport.

The air conditioning equipment was completed and put into operation at a time when the outside temperature was high, but the humidity was also high, so only the cooling equipment was used. A very few days after this equipment was put into operation, infections developed in post operative cases. The new equipment was suspected as being the source of this infection. A very careful examination of the operating room revealed that very minute particles of a black substance were being discharged into the room. A microscopic examination of these particles showed that they were highly contaminated. The air conditioning unit was immediately shut down and a thorough search made for the source.

It was then discovered that the filters provided for the air intake were not the full size of the intake duct, and some air was passing around the filters, carrying with it the soot from the smoke stack. Larger filters were provided and the unit again put in service. No more soot was noted and for a time there were no more infections.

The exterior humidity dropped and the humidifiers were placed in operation. Within a few days more infections developed. Again the air conditioning equipment was suspected, and an investigation showed that greenish blue particles were being discharged into the room. These also proved to be highly contaminated when placed under the microscope. The intake and all parts of the mechanical equipment were examined in an effort to find the source of the new contamination, but without result.

At the time of the writer's visit, the service men were cutting into the concealed copper discharge duct, as the last possible source of the trouble. When this was opened it was found that the entire interior surface of the copper duct was coated with a greenish blue substance which flaked off in minute particles when disturbed.

Upon being shown the condition of this duct, the author requested to see a chemical analysis of the water used in the humidifier. As this water was taken from the domestic water mains of the city, famous for its water, this analysis was readily obtainable from the city water company. This city obtains its water from four deep wells, widely separated. Analysis of water from each well was obtained and of a composite sample taken from a main. The analysis of the individual wells showed that in the two wells located nearest to the hospital, the Sulphates exceeded 100 parts per million.

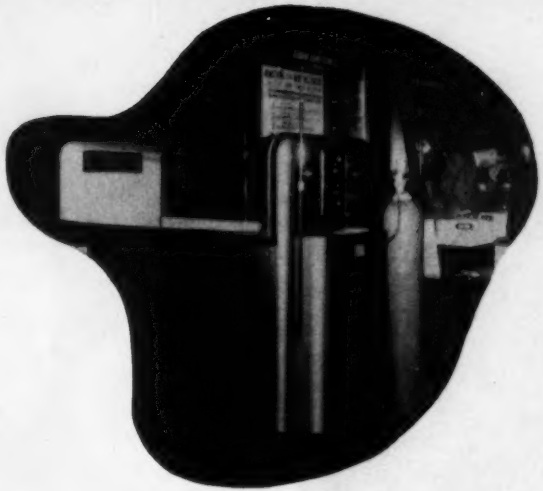
The cause of the contamination was then easily read. The Sulphates in the water contained in the warm, humid

air stream were reacting with the copper of the duct to form Copper Sulphate ($CuSo_4 \cdot 5H_2O$), commonly known as Blue Vitrol. This poisonous substance was the greenish blue particles discharged into the operating room, and into the open incisions of the patients.

From this it can readily be seen that nothing can be taken for granted in air conditioning. Here a widely advertised city water became a dangerous contaminating agent. Air conditioning can not be purchased "off the shelf" as can a domestic refrigerator, but must be carefully engineered in design and construction. Nothing can be assumed, but all elements must be carefully studied by a competent engineer and every precaution taken in the construction to reduce the ever present danger of contamination from air conditioning equipment installed in hospital surgical suites.

DO YOU KNOW

- The walls in the operating room do not have to be wiped down. The dust won't easily be activated and move into the operating field.
- A fan should never be used in the operating room. It activates dust and bacteria and introduces new organisms into the field.



The H.O.T. Bed

Newest of equipment shown at the Tri-State Convention, Chicago, May 1-3, was the H.O.T. Bed which provides positive control of humidity, temperature, and oxygen. Efficient, non-restricting means for accomplishing prolonged high oxygen therapy and thermostatic control of temperature both on air conditioning and warming systems. For patients of cardiac ailments, rheumatic fever, croup and respiratory infections and as a recuperation room following major surgery. Available in pediatric and adult size. Manufactured by Modern Hospital Equipment Co.

DR. C. M. LEE, JR., Assistant Prof. Surgery, College of Medicine, University of Cincinnati: Edith Olson, New York Hospital; Miss Edith Dee Hall, Founder and President of the Association of Operating Room Nurses of New York; Olive Philbrick, New York Hospital; Frances Reeser, Bronx Veterans Hospital; Rosalind Vallari, Bronx Veterans Hospital. Dr. Lee spoke on talcum powder as an operating room hazard at the December meeting of the New York Group. (See detailed account, next page).

Talcum As An Operating Room Hazard

Talk Delivered at the December Meeting of the Association of Operating Room Nurses, New York City

IN DISCUSSING the danger of talcum powder in the operating room it seems appropriate to present a brief review of the reason it came into use, and then progress to the reasons why its use should be abandoned.

You are all familiar with the fact that prior to 1890 rubber gloves for the operating room were unknown. Antiseptic, and later aseptic surgical technique, following the epochal work of Lord Lister and Louis Pasteur, had been fairly generally adopted but sterility of the operator's hands was impossible to achieve. Dr. William S. Halsted, Professor of Surgery at the Johns Hopkins Hospital was preeminent in the surgical world for, among other things, his contributions on the importance of meticulous surgical technique to the benign healing of wounds. In his efforts to perfect the aseptic technique he conducted extensive studies on the preparation of the hands, and the following quotation from one of his papers will indicate how rigorous this preparation was:

1. Scrub the hands and forearms for about ten minutes with the official green soap in water as hot as possible.

2. Wash off the soap in three or four basins of water, as hot as possible.

3. Clean the nails scrupulously with a sharp steel instrument.

4. Soak the hands and forearms for 10 minutes in hot corrosive sublimate solution 1-1000.

This proceeding is too severe to be employed everyday. It is advisable, therefore, to so group one's cases that the "clean" ones shall be operated on only on certain days — two days, perhaps in one week."

Origin of Surgical Gloves

While the surgeons might thus protect their hands and arms the regimen took a heavy toll among the operating room nurses, and Dr. Halsted was frequently deprived of the services of his favorite scrub nurse because of the severe irritative dermatitis she often sustained. He arranged with the Goodyear Rubber Company to make her some long rubber gloves and the other nurses quickly took to using them. But the surgeons continued to work barehanded until one of the residents, Dr. Joseph Colt Bloodgood, later a distinguished surgeon in his own right, suggested that the entire operating team might wear gloves. Their advantages were readily appreciated and thus the last barrier to truly aseptic technique was overcome. It is of interest also, that soon after the rubber gloves were adopted, Dr. Halsted permanently deprived himself of the services of his favorite scrub nurse, at least in the operating room — by marrying her.

With the adoption of rubber gloves came the problem of a lubricant to facilitate putting them on the wearer's hands. The old "wet technic" of plunging the hand into a solution-filled glove is, of course, known to all of you, and is a technic of only historical interest. The prolonged maceration and exposure of the hands to irritating chemicals within the impervious glove led to a prohibitive incidence of skin rashes of the hands and arms. Hence the development of the present day "dry" technique using a fine powder as a lubricant. This has proved so satisfactory that it is now universally used.

Effects of Foreign Materials

Before considering the reasons that talcum powder should not be used for this purpose I should like to digress for a few moments to review the effects of foreign materials in the tissues. When any tissue in the body is injured, whether by bacterial invasion, chemical irritation, or trauma, an essential part of the protective mechanism is an outpouring of fibrin on the injured surface. Fibrin acts as an effective temporary covering and as an adhesive agent for sealing off the injury, if possible, by making it adhere to an adjacent surface. It also acts as a scaffold and as a nutrient material for fibroblasts, or scar tissue cells which grow into the matrix provided by the fibrin and form a temporary repair with granulation tissue which finally becomes permanent scar tissue.

This protective reaction is common to all tissues in the body and the degree of scarring is proportional to the extent of injury. In some tissues, such as the skin or the peritoneum, if the injury is comparatively slight and of short duration, the surface heals without a scar, and the fibrin, which formed a temporary covering is absorbed by

the growing cells and a perfectly smooth surface is left. The presence of a non-absorbable foreign body acts as a continuing irritant and the tissues protect themselves by covering it first with a layer of fibrin and then with granulation tissue, which is transformed into a premanent fibrous or scar tissue envelope. For example, a bullet, imbedded in soft tissue such as muscle or fat will, if infection is prevented, become encased in a scar tissue envelope and produce no disability unless it impinges on some vital structure such as nerve, blood vessel or joint. Even a silk suture is similarly encased in fibrous tissue but such sutures, being comparatively few in number, are harmless in the absence of infection. But even the smallest particle, if it is not absorbable produces the same result — being encased first in fibrin, then in granulation tissue, and finally in a scar. When great numbers of such particles are placed in the tissues the aggregate result may be devastating indeed. The connection between this fact and the use of powder as a glove lubricant is apparent.

When dry technique was first adopted, the best available powder of sufficient fineness and uniformity was lycopodium powder, which consisted of the spores of the male fern, lycopodium. This was widely used until it was observed that it produced a violent foreign body reaction, and resulted in dense intra-abdominal adhesions, draining sinuses and granulomata in soft tissue wounds, etc. It was assumed that this reaction was due to the fact that the particles of powder or spores were an organic material and that the irritant effect was due to some quality inherent in the spores. By this time the manufacure of talcum powder had been perfected to the point where a uniform and finely divided product was available. Without experimental control it was assumed that since talc is a mineral substance it would be inert in the tissues, and it became the universal choice as a glove lubricant. It seemed ideal for the purpose because even after autoclaving it remains free-flowing and does not change in color or physical properties.

Objections to Talcum

What, then, are the objections to the use of talcum powder in the operating room? It is a curious thing that although reports of serious trouble from its use began to appear within a short time after its adoption, little attention was paid to them. The earliest reports of granulomata and sinus tract or adhesion formation were recorded in simultaneous series with similar lesions produced by lycopodium spores. In the last 20 years well over a hundred such reports dealing at first with both powders and subsequently with talc alone have appeared in the literature. In 1937 Feinberg showed that by viewing a section of tissue under polarized light the doubly refractile talc crystals could be

made to stand out prominently and a simple way of demonstrating them in lesions of hitherto unrecognized or mistaken etiology became available.

You have all heard of the industrial disease known as silicosis common among miners, tunnel workers, and persons exposed without adequate protection, to industrial dusts. The finely divided particles become imbedded in the lungs and produce such extensive diffuse scarring that the X-ray of the chest was sometimes mistaken for advanced tuberculosis, and serious respiratory embarrassment often resulted. Talc, from which talcum powder is ground, is a hydrous magnesium silicate and its effect in the body is the same no matter how it is introduced, whether by surgical implantation or by any other route. It can gain access through any mucous surface or through the lungs, as well as through operative wounds. Once imbedded in the tissues the same foreign body reaction previously described takes place around each particle, and if the particles are numerous enough the result is extremely serious. In the lungs it can produce silicosis. Even the small amounts introduced on the glove or speculum during examination of the throat or vagina has produced serious chronic granulomata. In soft tissue wounds chronic sinus tracts and lesions closely simulating tuberculosis result. For example, in 1946 a group of workers at the Mayo Clinic reviewed their pathologic slides in 198 cases in which a diagnosis of hyperplastic tuberculosis had been made. In 49 of these cases talc crystals were definitely shown to be responsible for the lesions when no tubercle bacilli could be found and the talc was demonstrated by polarized light. In 1940, German, in Cincinnati, took biopsies in a series of unselected patients who were submitted to second laparotomies, and in 40 out of 50 cases found talc in adhesions and granulomata.

In 1943 and 1945 Seelig and his associates reported extensive experimental studies in mice, showing that adhesions could be produced at will by implanting talc in the peritoneum. I have myself conducted experiments in dogs which I think demonstrate quite conclusively the role of talc in adhesion formation. This work has been abundantly confirmed in similar studies at Duke University and at the University of California Hospital.

Another Aspect

But first let us consider another aspect of the matter. Many surgeons, although admitting the demonstrable bad effects of talc have dismissed the danger by simply washing their gloves off in sterile saline solution before starting the operation. This powder, on the outer surface of the gloves, is but one source of contamination and it is easy to

demonstrate that such washing is entirely ineffective. One has only to wash a pair of gloves as thoroughly as he can, even in running water, and then hang them up to dry. The large amount of powder still adhering to the dry gloves is easily seen. Then there is the larger amount of powder inside the glove — especially in the finger tips, which can escape into the wound when a glove is perforated or torn during the operation. In 1942 Weed and Grove conducted a study to determine how often gloves are torn or perforated during an average operation. In a series of 4,549 operations they found that one or more gloves were torn in 3,406 or 74.4%. Thus in three-fourths of the operations this was a possible source of contamination. In these same 4,549 operations 35,763 gloves were used. Of these gloves 8,103 or 22.6% were perforated during the operation.

But there is another and equally potent source of talc contamination. When the gloves are put on at the beginning of the operation, or changed during it, a cloud of powder spreads through the room as the hands are being dusted. To demonstrate how much powder settles on instruments, drapes, and into the wound one has only to repeat one of Dr. Seelig's experiments. He took a number of squares of polished black bakelite and exposed them at various points about the operating room and tables. The powder settling on them is easily visible and it would surprise you to see how much there is.

Another Danger

Nor is danger to the patient the only one. As early as 1937 Kronenberg, in Illinois, became concerned over the nurses in the supply room whose duty it was to put up the rubber gloves. He arranged for technicians from the Division of Industrial Hygiene of the State of Illinois to conduct dust counts on the air in this room during preparation of operating gloves. This study showed a dust count of 39,405,000 particles per cubic foot of air. If we calculate on the basis of alveolar air volume of 350 cc., each nurse breathed in 50,519 particles with *each breath*.

It is apparent from the foregoing, that the danger from talcum powder is much greater than the casual observer might suppose, and if talc is used at all, no matter how carefully the surgeon washes his gloves, it is a serious threat to both patient and personnel.

With all this evidence of the danger, it may seem strange that talcum powder was not abandoned long ago. The difficulty has been to find a suitable replacement for it. I should like to emphasize the word "replacement." Many of the papers on the subject speak of a "substitute" for talcum powder, and "substitute" implies something not as

good as the original. Since talcum powder is dangerous, it needs to be replaced, not substituted for.

The search for such a replacement has been handicapped by the problem of sterilization of the powder. We know now that any non-absorbable powder will induce a foreign body reaction with the untoward and often disastrous results which I have outlined. Only an absorbable soluble non-irritating powder will answer the purpose. Rice powder, for example, has been used in the orient for cosmetic purposes for thousands of years and would seem ideal. But, as any housewife knows, when rice powder, which is a starch, is cooked it becomes a glutinous jelly. Hence it cannot be autoclaved. Seelig was the first to suggest corn starch, but the same difficulty was encountered. Vigorous efforts were made to treat corn starch so that it would resist autoclaving, but until 1946 all such processes involved the use of formaldehyde, which, remaining in the starch, was a violent chemical irritant. Seelig finally resorted to potassium bitartrate powder, which was only fairly satisfactory. While it resisted autoclaving to some extent it turned brown in the process and tended to "gel" into clumps, making a coarse and lumpy powder. In some of the experiments which Dr. Lehman and I performed we tried tantalum oxide powder, reasoning that since metallic tantalum is nearly inert in tissues a powder derived from it might be equally benign. But, since it is an insoluble and nonabsorbable powder, the reaction of the tissues to it is quite as violent as it is to talcum powder.

Slides Reveal Results In Experiments With Non-irritating Glove Powder

In 1946 a method was developed for treating corn starch by physical and chemical means to produce a heat-resistant powder. Several types of such powders were made available to Dr. Lehman and me for experimental and clinical evaluation.

These experiments offered convincing evidence that talc is indeed a dangerous material in contact with living tissue and that the new, treated starch powder (bio-sorb) is an efficient and effective replacement for it. Experience in our operating rooms in the past three years has confirmed our experimental results and we are convinced that the continued use of talcum powder is as much of a surgical misdemeanor as failure to scrub one's hands adequately or to use improperly sterilized instruments.

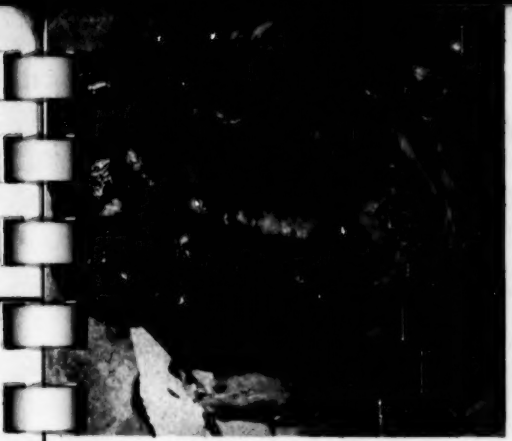


Fig. 1. Small bowel of dog treated with talcum powder. Bowel and mesentery have been removed en masse and laid over the end of a bucket. Adhesions are so numerous and dense that the cohesive mass hangs together like a cap.

Fig. 3. Section under low power through an adhesion between two loops of bowel.

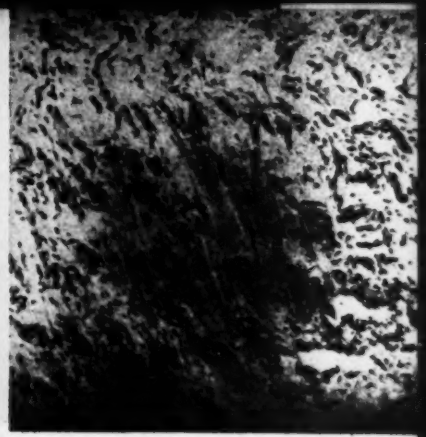


Fig. 4. Higher magnification of the area indicated by the arrow in Figure 3. This shows the inflammatory reaction and the numerous foreign body giant cells.

To clarify the pictures still further, the following excerpt is given of a paper by C. Marshall Lee, Jr., M.D., F.A.C.S., and Edwin P. Lehman, M.D., F.A.C.S., Professor of Surgery, Head of Department of Surgery, University of Virginia on "Experiments with Non-Irritating Glove Powder" which appeared in "Surgery, Gynecology and Obstetrics," Vol. 84, 689-695. The illustrations and material from the original paper are used by special permission of "Surgery, Gynecology and Obstetrics" and also with the permission of Drs. Lee and Lehman.

Excerpt. Since the introduction of dried glove technique, now almost universally employed by surgeons everywhere,

Fig. 5. The same area as shown in Figure 4, uncer polarized light with partial rotation of the prisms. This brings out the larger talc particles.

the powder used on rubber gloves has been under some degree of suspicion. Drs. Lee and Lehman in their experiments, as reported in "Surgery, Gynecology and Obstetrics," made a number of experimental studies on the physical properties of various powders with commercial talc as the control. Four of the powders were derived from corn starch which had been treated by physical and chemical means to prevent gelatinization in the autoclave and two of the powders had a special chemical treatment to improve their lubricating value.

RESULTS

Controls. No adhesions resulted when no powder was used. When talcum was used dense generalized adhesions were formed. Even when the dose of test powder was reduced to 1/16 teaspoonful, or roughly the washings from one pair of gloves, the result was the same. At autopsy the small bowel was removed *en bloc* and formed one cohesive conglutinate mass, (Fig.1). The small spots of agglutinated talc were readily visible in gross under the adhesions. Microscopic sections taken through sample adhesions showed the talc embedded under the adhesions against the serosa (Fig. 3).

Under polarized light the identity of this material was evident (Figs. 4 and 5). The celiac and superior mesenteric nodes were greatly enlarged.

Experiments. Tantalum oxide produced as extensive adhesions as did talc. Further work on this powder was abandoned.

Powder 108 was known to represent a refinement in processing, over a number of other powders tested, and since its physical properties were superior, the next major series was conducted with this powder. In every case, not a trace of powder was to be found after three weeks, nor was there a single adhesion present. The bowel when removed *en bloc* was as clean and healthy as if it had never been touched. These striking results indicate the superior-

ity of powder 108 (Bio-sorb) over every other powder tested and are as good as the controls without powder.

CLINICAL EVALUATION

By arrangement with the superintendent of a private hospital in Cincinnati powder 108 was installed in the operating room in place of talcum, without the prior knowledge of the operating surgeons. The operating room supervisor was asked to take note of any comment they might spontaneously make.

With only one exception every surgeon commented favorably, having noticed the improvement in physical quality over the powder previously in use, and asked what the "new powder" was. The single exception made no comment at all, favorable or unfavorable, and apparently did not notice the change.

In the course of this trial use only one unfavorable feature was observed. It happens that in this particular hospital glove powder is put up in aluminum salt shakers and used throughout the course of a day's operating room schedule. Frequently these shakers are not emptied in one day and are reautoclaved and used again the next day. It was noted that while the physical properties of the powder remained unimpared through one, or at most two, autoclavings there was some tendency to clump after the third such sterilization. After the fourth or fifth, although the clumps were readily "shaken out" and fine dusting powder could be obtained from the can, many residual lumps were left.

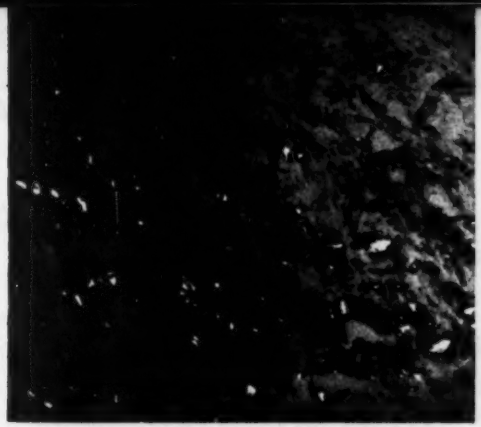


Fig. 6. Same area as in Figures 4 and 5. Here the prisms have been completely rotated blotting out all but the doubly refractile talc particles.

This single disadvantage seems trivial in comparison with the many advantages derived from the use of this powder, and is easily obviated either by using smaller shakers or by employing the widely used technique of putting up the dusting powder in individual packages with each pair of gloves.

"What An O. R. Nurse Should Know About Intra Arterial Transfusions"

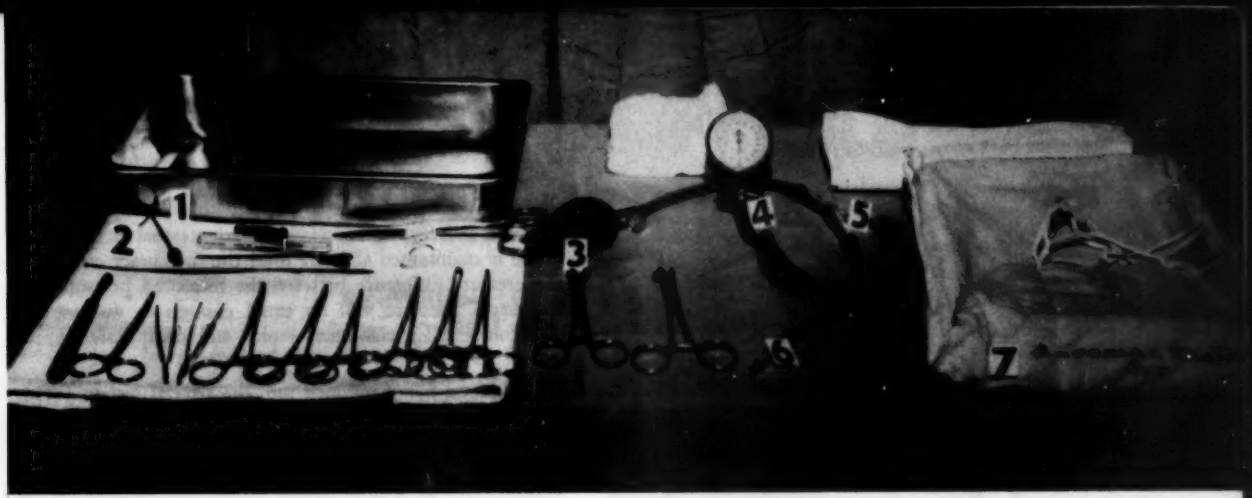
—Albert E. Roberto, M.D.
New York Polyclinic Medical School & Hospital

IN THE TREATMENT of hemorrhagic shock the rapid restoration of blood volume and blood pressure is of primary importance. The standard method of intravenous transfusion of whole blood is still the best method of combatting surgical shock. In the occasional case of shock, due to blood loss, where the blood loss is so great and the shock so profound, it will be noted that these methods will fail and death will ensue. It is here that the intra arterial transfusion of whole blood will often prove life saving.

This method of treatment was first studied in this country by Kohlstadt and Page, on dogs. Since then many reports of successful use of intra arterial transfusions in the treatment of traumatic and hemorrhagic shock in humans have entered the literature.

Without entering into the controversy as to the nature of shock, it is apparent that the reduced blood volume and blood pressure cause a marked reduction in tissue perfusion. By restoring the blood pressure and blood volume, tissue perfusion is restored before irreversible damage occurs. This is the fundamental principle involved in any treatment of shock. When patients fail to respond to the vigorous treatment of shock in the orthodox manner, intra arterial transfusion of whole blood will frequently rapidly restore the blood pressure and circulating volume and tissue perfusion to levels compatible with life.

In the reports which have appeared in the literature many types of apparatus were used. It has been our feeling that in order to make this a practically useful and readily available form of treatment, the equipment has to be as simple as possible. As will be noted in the photograph, the equipment which we have assembled consists of the following:



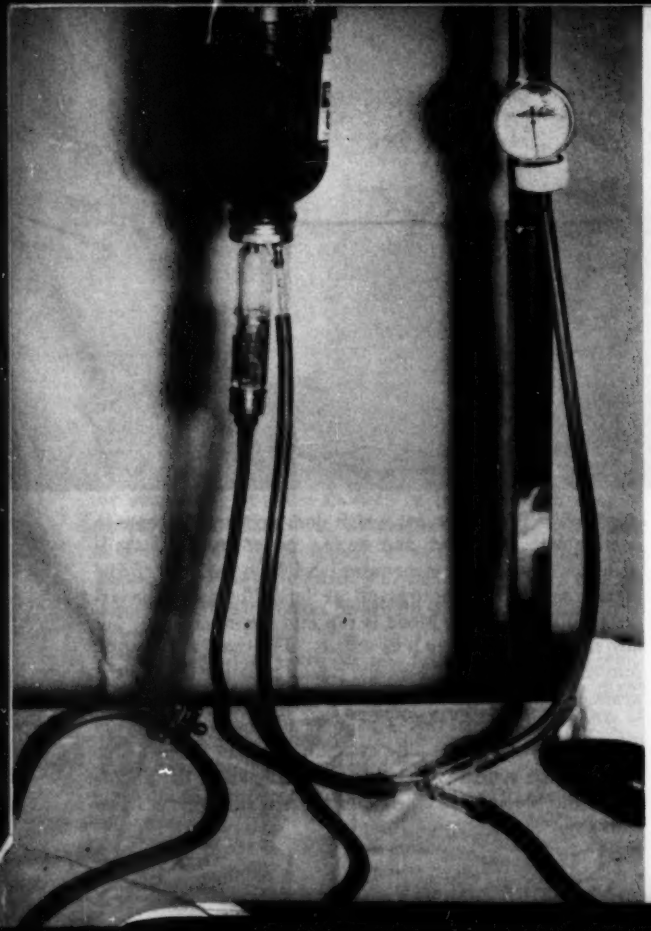
1. **A cut down set of the ordinary type.**
2. **Straight & curved vein canulae.**
3. **An anaeroid manometer and bulb.**
4. **Three lengths of rubber tubing each about 18 inches.**
5. **A glass Y tube.**
6. **A glass adaptor.**

One Baxter Vacoliter transfusion bottle and recipient set of the usual type.

It has been our practice to sterilize in one pack everything except the manometer and bulb. Sterility is not required in the equipment which does not actually come in contact with the blood, and so for convenience and availability we keep the manometer and bulb on top of the sterile set. The photograph at left illustrates the assembled set. Usually blood is run into the radial artery but any easily located artery will suffice. The canula is inserted into the artery, *always* with the canula pointing toward the heart.

It can be seen that this is a simple apparatus and consists of articles which are readily available in all hospitals.

When the system is connected as is shown in the photograph the blood is pumped into the arterial system. The



rate of pumping should be regulated so that the pressure is not increased by more than fifty millimeters of mercury at one time. It can be argued that by measuring the head of air pressure we are not accurately measuring the pressure at which the blood is entering the blood stream. It has been our feeling from our experience that if the blood bottle is maintained at heart level the inaccuracy caused by the pressure difference between the measured pressure and the actual pressure will be small enough to warrant the abandonment of elaborate, bulky and complicated apparatus.

The blood being pumped into the arterial system. This is essentially a closed system, will be forced back in the aortic valves and throughout the rest of the arterial tree at about the pressure which we read off the manometer. This will continue until the pressure in the arterial system is the same as that registered on the manometer and then the pressure is again raised and so on until the pre-shock blood pressure is reached. The blood volume is of course being increased at the same time and as a result of these two factors being restored the tissue perfusion will be maintained preventing irreversible changes and death.

The transfusion should be continued until the patient is able to maintain the blood pressure at a satisfacory level. It has been our policy to then ligate and divide the artery used. The skin is then closed with black silk sutures.

It should be emphasized that this is not a method of treatment for the average case of shock, but should be used only in those cases which do not respond to the usual therapeutic measures.

MEDICO—LEGAL PROBLEMS AND THE O. R. S.

By William F. Martin, Counselor at Law Counsel for the Medical Society of the State of New York

Transcript of a talk given before the Association of Operating Room Nurses of New York.

FIRST, I would like to tell you that if you would care to read a recent book relating to the whole subject matter of my talk, it might be well to acquire for your library, "Doctors and Patients and the Law" by Regan, published in 1949 by C. V. Mosby Co. of St. Louis. The author is a doctor-lawyer in California and he has collected a great many case histories of medico-legal matters relating to doctors, hospitals and nurses. The work is a rather comprehensive one and even attempts to set up a preventive program for avoiding such troubles.

We have learned a great deal of what we know of this field of law the hard way and by that I mean the handling of cases and claims brought against doctors, hospitals and nurses. You might be surprised to learn that there are about thirty such cases brought every month in the State of New York alone.

The factual situations involved in medical malpractice cases very often involve nurses and it is conceivable that they could be named as defendants. More often than not, they are not so named. There may be an element of gallantry on the part of the lawyers involved in not naming them, but there is a practical reason as well. Namely, the feeling that usually nurses do not earn much money and could not meet a verdict of any size. But there have been numerous instances where nurses have been sued and in at least a few cases to my knowledge, they have had to pay a judgment. I recall at least one case where a nurse's wages were attached to take care of such a judgment.

Charitable Hospital Rule Enforced

In New York State, the so-called charitable hospital rule is enforced. A charitable hospital is defined as one which puts

all of the funds collected, whether from patients, gifts or any other source, back into the support of the institution and from which no person or persons derives a dividend or other profit. Such an institution is not responsible for the acts of negligence of properly employed professional help, such as a doctor or a nurse. If, for instance, a patient is burned by a hot water bottle and it is proved that the bottle was put into the patient's bed by a nurse who negligently forgot to take it out, the hospital is not responsible. When such an incident takes place, the nurse could be sued and held individually responsible. It is the duty of the supervising nurse to report it to the superintendent and to the attending doctor, and a full and fair investigation should immediately be had to determine how the burn occurred. Such an investigation should be put in writing and kept as a part of the records of the hospital.

While we are on the subject of records, let me say that every time something untoward happens in an operating room, it is the duty of the supervising nurse to see that a full and fair report of it is made. If such a report is not made and any doubt exists later as to just what occurred, it can prove a source of great embarrassment to the hospital, to the doctors and to the nurses. When an accident befalls an unconscious patient and a complete explanation is lacking, the natural inference is that someone was negligent. Consequently, it is neither right nor expedient to throw an air of mystery about such a happening. In the absence of a full and fair explanation, the courts may impose liability upon all involved.

Report Broken Needle

Needles may break off either in the course of an operation while suturing is being done or in the course of giving hypodermic injections. The law of New York clearly states that the mere breaking of a needle is not actionable negligence as such can happen with the best of care and skill. But unless the patient or his close relatives are promptly told that the needle did break and there is a full discussion of what steps should be taken to localize it and possibly remove it, then there may be liability for deceit or concealment. This is but another instance of where the law forgives an accident but expects honesty and fair dealing with the patient.

We have had a number of cases where doctors and nurses tell us that they did not know that a needle broke off and yet subsequently there is removed from the patient, a curved surgical needle which cannot be explained on any other basis than its loss during the operation. In such a case, there is no real defense and failure to know of the loss of a needle leads to one of two conclusions, negligence or deception.

Before a patient is ever operated upon, there are many ways in which skilled operating room supervisors can prevent a subsequent injury happening to that patient. For instance, extreme care should be exercised to see that the tanks of gases are hooked up to the proper connections leading to anesthetic machines. Some years ago, we had a case where the first patient into an operating room was to get a general anesthetic and instead of using the machine, the doctor resorted to the open drop method of administering ether, and the operation was uneventful. The second patient in the room got a spinal anesthetic but the spinal wore off and the surgeon asked one of the doctors to give the patient some ether and oxygen. This the doctor commenced to do, using the appropriate dials on the machine to select the gases desired. Noticing that the

patient was turning blue, he added more oxygen. After the patient died, it was discovered that a porter had disconnected the tubings leading to wall brackets which in turn, connected with tanks placed just outside the operating room wall. When he connected up the tubings again, he mistakenly connected the oxygen tubing to the carbon dioxide and the carbon dioxide to the oxygen. Such tasks designated to lay-assistants should always be checked on by the professional operating room staff. Appropriate steps should be taken to see that no such mistake could happen. Certainly by hindsight, one learns that when a patient exhibits a sudden unusual reaction, no hasty conclusion should be drawn as to what is causing the distress, but a check should be then and there made rather than later. Human judgment is finite but from every mistake a lesson should be drawn that would prevent its happening again.

Precautions Help to Avoid Explosions

Secondly, and again in relation to anesthetics, many of the latest and most effective of which are highly volatile, every precaution should be taken to prevent operating room explosions. If there is a sign outside an operating room which says "Do not wear nylon stockings or other similar articles of attire", this sign should literally be obeyed and not honored only in the breach thereof. To aid in enforcement of this and similar precautions, supervising nurses should discourage indiscriminate presence in the operating room of others than those immediately needed.

Third, there should be a record kept of all the instruments and sponges which are to be used in the operation so that during its course, they may be checked and at the close of the operation, a count may be obtained. We have had a number of cases where hemostats or large sponges with tapes and rings on the end were left in the patient and where we were told that of course, the small sponges were counted but such large sponges are not counted because it is highly unlikely that they would be left in. A count should be made of them. An operating supervisor should see that in all the rooms under her charge where any type of operative procedure is being done, whether it be in a main operating room, a surgical dressing room, a nose and throat room, a delivery room, etc., the count is kept.

There was a recent case in the midwest in which a gauze count was reported as correct. The surgeon and the hospital were exonerated but a verdict was returned against the nurse because a gauze was found in the wound. Therefore, if a nurse is in doubt as to the gauze count, she should report that doubt to the surgeon and it is then his duty to take what steps he thinks are necessary to resolve the doubt. If the surgeon cannot find a gauze, the operating room supervisor should discuss with the surgeon, the desirability of taking a post-operative x-ray picture to see if a foreign body can be located.

Sometimes such a picture can even be taken and developed during the course of the operation. It is much better to say one was uncertain about the count and put on the record the efforts that were made to resolve the doubt, than to put nothing on the record and have it later appear that a foreign body remained in the patient.

The next two pages show how x-ray detectable Sponges decrease the danger of a "lost sponge."

X-ray of obese subject: (220 lbs.—5 ft. 9" high); thickness of part x-rayed was 29 centimeters: portable machine, 15 milliamperes, 80 kilovolts, distance 30 centimeters, time 3½ sec.

Detectable Sponges

Now, when the clinical picture suggests that a lost sponge may be the cause of the complication, it is possible to make positive diagnosis at once, without re-operation, by means of X-ray.

Extensive investigation of the radiologic characteristics of an x-ray detectable sponge was undertaken recently in order to ascertain its performance under all possible conditions. As a result of this study, made with a portable machine, the following conclusions were drawn based on a study of almost one hundred separate plates utilizing as many radiologic variables:

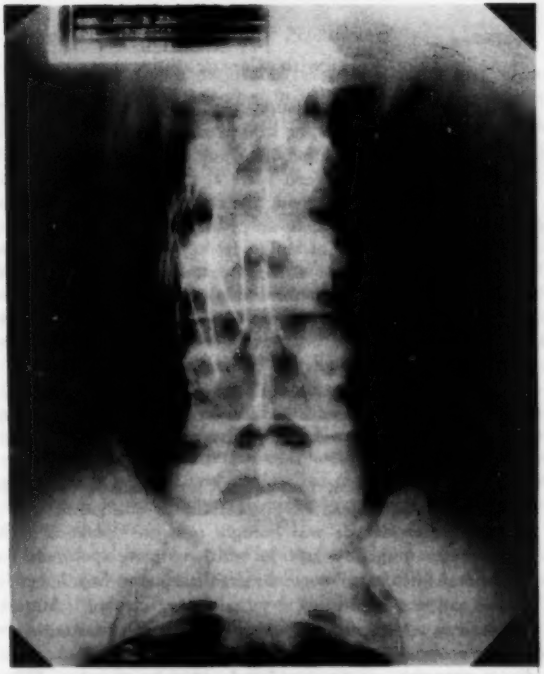
1. The sponges* are easily detected by both experienced and non-experienced observers. The poorer the quality of the film, the more accurate this statement becomes.
2. A Potter-Bucky diaphragm or grid is definitely indicated in radiographing parts of greater than 10 centimeter thickness.
3. Respiration is not of great significance when radiographing the pelvis or abdomen but is of considerable importance when studying the chest.
4. The factors employed should be the same as those which are customarily used for X-raying the particular part under investigation.

**Marketed by Johnson & Johnson under the name Ray-tec.*

5. A film should not be considered satisfactory unless its diagnostic quality is good enough to pass judgment upon the anatomical structures of the region being studied.
6. When radiographing parts where there is a great difference in density between neighboring structures, two exposures should be employed, each of which would be best suited to visualize respectively the structures under examination.

The accompaning illustrations show the radiologic appearance of such a sponge in a medium and an obese subject, utilizing radiologic factors which would be readily available in the average hospital. In order to simulate actual physiologic conditions as closely as possible, the studies were conducted by placing the sponge between two layers of beefsteak, which was placed upon the patient's abdomen, i.e. as near the x-ray tube and as far away from the x-ray plate as possible, thus making the conditions even more difficult than would be the case were the sponge actually within the abdomen.

As is apparent in both of these films, in spite of the unusually diffcult conditions employed, the radiovisibility of the monofilament used in this sponge is excellent and is further accentuated by the random design which the monofilament forms, thus readily differentiating it from such opaque tissues as bone.



X-ray of medium subject: (185 lbs.—6 ft. 1" high); thickness of the part x-rayed was 23 centimeters: portable machine, 15 milliamperes, 70 kilovolts, distance 30 centimeters, time 4 sec.

Continued

Take Care with Caustic Substances

Fourth, all caustic substances used in the operating room should, so far as possible, be kept in a place where they cannot mistakenly be used for some other purpose than that for which they were intended. Several years ago, in one of the leading hospitals in the City, following the closure of an appendectomy wound, the house doctor, in an attempt to remove the iodine stain from the surface of the body, applied what he thought was alcohol. Noticing a strange reaction on the part treated, he suddenly realized that the bottle contained phenol instead of alcohol. He neutralized the liquid at the wound site so that very little scarring remained but some of the liquid had fallen into the crease of the patient's elbow and she got a nasty scar. A little phenol had been put in a cup to cauterize the stump of the appendix and the stock bottle had been left in the operating room where by mistake, it was used as stated before.

On several occasions, formalin or formaldehyde have been used by mistake instead of novocaine. In one recent case a bottle of formaldehyde was brought into the operating room to pour into a shallow tray in which to place specimens for the laboratory. Somehow or other, the bottle was allowed to remain and was subsequently mistaken for alcohol. All substances that are caustic and which get into an operating room for any purpose should be stained in color with some harmless dye so that they cannot possibly be used by mistake. When vials of spinal anesthesia are placed in an antiseptic solution *(which always contains alcohol and formalin)* should stained with some distinguishing dye so that if there is any seepage through tiny cracks in the vials, all risk of injecting into the patient's spine a fluid containing some harmful contaminant will be removed. As a further precaution, it is preferable wherever possible to use antiseptic solutions which could not sclerose. When two solutions of reasonably similar effect are available, always choose the least harmful one.

Fifth, in placing negative poles of cutting or cauterizing machines on the table under the patient, make sure that they do not ruffle or bunch up. We have seen a number of nasty burns that come about through a sparkgap of current jumping from the pad through aid to the patient's body from the negative pole. Since the patient once placed on these pads is usually unconscious when the current is on, he cannot protest and the burn can become quite severe.

Make Necessary Devices Available

Sixth, always make sure that airways and other devices which may be needed in an emergency are readily available and further, where, for instance, cyclopropane is to be used, the necessary safety devices are available. Discuss with the surgeons, the type of shoes and clothing that should be worn when certain volatile gases are being used and rigidly insist that all operating room personnel wear them.

Seventh, set up a system so that from the time the patient is brought from a ward or room to the time when the operation commences, no possible error of identification can lead to a person being operated on through a mistake of identity. On occasions, such a mistake has occurred and it usually turns

out that the surgeon was relying on the anesthetist, who in turn was relying on somebody else, to make sure that the correct patient was in the operating room. If there is the least doubt or ambiguity, for instance as to which leg of a patient is to be operated on, resolve the doubt before the operation commences.

From the moment the patient starts to the operating room and is under sedation, he should never be left alone. The usual wheel cart is not very wide and there are many reported instances of patients falling off such carts often to their great damage. Not so long ago upstate, a patient on one of these wheel carts was being pushed along a corridor when the attendant took his hand off the cart to push the elevator bell. The cart went beyond the attendant and rolled down a flight of stairs. In another case, a nurse took her eyes off a little tot who was about to have a tonsillectomy performed and the child fell off the operating table sustaining multiple bruises and the loss of several second teeth.

Another precaution which operating room supervisors should bear in mind relates to abdominal operations upon women of childbearing age. Whenever there is a possibility of pregnancy being present that should be ruled out before operation. An A-Z test under controlled conditions should be performed before the operation is done. Either the doctor should have noted on the record that from a specimen of urine obtained at his office, the finding is negative or the test should be repeated in the hospital before the operation. If it is not clear that such has been done, the operation, unless it is one of extreme emergency, should be delayed until such a step has been taken.

Case Claims Negligence

A very recent case decided by the Appellate Courts, arose out of the following situation: A young expectant mother was in the labor room of the defendant hospital when she was seized by an intrapartum psychosis and leaped from a window, when the nurse furnished by the defendant was out of the room answering a telephone call.

Plaintiff claimed that the defendant was negligent in failing to supply constant attendance in her then stage of pregnancy and in failing to place barriers on the window in the labor room. A jury had returned a verdict of $35,000 because of the grounds of negligence above stated. The Appellate Court reversed stating that liability may not be predicated on the failure to have bars on the window of the labor room. The Court said there is no proof of a custom to have such equipment. This, however, was only one of the grounds of liability submitted to the Court and the case was sent back for a new trial with the clear implication from the Court's finding that while the jury might not consider the fact that the bars should have been on the window, it might be negligence to leave the mother unattended.

One of the judges, stated "It was for the jury to say whether the deceased was about to be delivered of a child and whether reasonable care required the defendant to have a nurse in constant attendance, and if constant attendance required that the deceased should always be in the line of vision of the nurse."

The lesson to be drawn from this case is that an expectant mother who has been sedated should not be left unattended

for any period of time no matter how brief, and secondly, that since it happened that woman jumped out a window in a labor room, it is probably a further wise precaution to see that windows in such a room are so arranged as to prevent such a future happening.

While we are on the subject of windows, which do admit of being used as a path for self-destruction, it is well to point out that all patients who are post-operatively in delirium and/or under sedation, and/or under the effects of an anesthetic, should be watched and preferably in a recovery room, and the windows in such a recovery room should be of a type that would not admit of a patient using them as a means of exit. We have in our experience seen a number of cases where apparently undisturbed patients have jumped out of windows shortly after operations.

Patients who have fasted all night and into and past their breakfast period in the morning should be watched carefully at all times by the nursing personnel because of the likelihood that while undergoing treatment, they may faint. We had a case some years ago where a doctor injected into the arm of a policeman, a medication by hypodermic and turned his back for one instant to put the hypodermic syringe on a table in back of him. The patient was sitting on a rather high examining table with his feet dangling. As the doctor turned and took his eyes off the patient, the patient fell and suffered a severe concussion with some permanent damage. We had another case at a hospital, where a doctor aided by a nurse, was making a proctoscopic examination of a patient. As the examination was finished they both started to leave the room and asked the patient to get up and follow them. He got up and having fasted for some hours, became faint and fell to the floor, sustaining a concussion.

All of the above-cited examples are merely illustrative of how the law of averages may work against you as a nurse, if you do not take precautions with patients who for one reason or another are not in normal possession of their faculties.

ORS Should Watch for Strain

An operating room supervisor should keep her trained eye out for any undue strains on the body of the patient. For instance, where a woman is put in extreme Trendelenburg position, the arm should not be extended for the purpose of giving an infusion. The combination of continued pressure on the shoulder girdle while the patient is under anesthetic and unable to remonstrate has led on occasion to temporary and even permanent brachial plexus paralysis.

Further, operating room nurses should be on constant guard against continuous leaning on the patient by any member or members of the operating team. Of course, the position of the arms should be checked. During the operation, constant watch should be kept on the condition of any limb or limbs that have tourniquets applied to them. These should properly be loosened at frequent intervals and certainly never should be allowed to stay on for too long a period of time. Permanent damage may be the penalty of forgetting precautions in this regard.

Every effort should be made to keep relatives of patients out of the operating room. Occasionally, they are invited in by the surgeon. All such attendance of non-essential people in the operating room should be heavily frowned on. If any

complications ensue, the description by the visitor of what took place may later prove to be very embarrassing. For instance, in an extended surgical procedure where a malignancy was being removed, the spinal anesthesia wore off in the course of the operation. The brother of the patient was in the room and he testified that the reason it wore off was that the surgeon saw the spinal given by the anesthetist and then waited to begin his operation for thirty-five minutes until several doctor friends who were interested in the procedure arrived in the operating room. The brother further testified that when the spinal wore off, the general anesthetic machine was not in working order. Such testimony was very embarrassing although untrue. This may be an extreme instance of the danger of which I spoke but there is no doubt that many things which happen are subject to later misinterpretation.

Consultations Should Be Private

In addition to keeping relatives of the patient out of the operating room, nurses should make every effort to see that consultations among staff physicians are carried on out of hearing range of the patient or relatives. Honest differences of opinion among the doctors as they are candidly discussing the case, may later be interpreted as evidence of indecision or mistake.

Of course, it is generally the rule in this State that hospitals are not liable for the negligent professional acts, of competently hired doctors, internes, nurses, orderlies, etc. There has been, however, a narrowing of this rule in some of the recent decisions. An extreme instance of this was a recent case where one of the Appellate Courts said that if a supervisor or a nurse comes in to see whether a patient is mentally disturbed or not and decides that bedboards should not be placed on the bed and subsequently the patient falls out of the bed, the decision not to place bedboards on the bed was a professional nursing act for which the hospital would not be responsible. But, if she decided to put bedboards up and then did not put them up, the failure to put them was not a professional nursing act but an administrative act or omission for which the hospital is responsible.

In another recent case, a trial judge held that if a patient complained, coming out of an anesthesia, about a burning sensation from a hot water bottle and repeated such a complaint, that the failure of the nurse to whom he or she complained to take the bottle out of the bed was an administrative act. Here the Appellate Court reversed and held that that was simply a nursing act for which the hospital was not responsible. It is therefore difficult to precisely state under just what circumstances a hospital will or will not be held for a negligent act or omission by a nurse.

Records Should Be Clear

A habit of nurses which has proved of great embarrassment to hospitals in the past is corrections on a record or the use of ink eradicator on the chart. Recently in a case where a patient had fallen out of bed, the entire page of a record had been ink eradicated and then over the ink eradicated section, the methods used to resuscitate the patient were delineated. The particular hospital cautioned the nurses to avoid the use of ink eradicator as it was a source of embarrassment to the institution. Before putting down a note in the record, a nurse

should make sure in her own mind that the note is subject to only one interpretation. For instance, in a record which we saw some years ago, there was a statement by a nurse about the patient's condition, which read as follows: "The wife of the patient said that 'this would not have happened if what I had requested had been done several days ago' ". There was no description of what the wife had requested and it was impossible to determine whether her request made any sense or not.

We did not see the record until several years after and the nurse could not recollect just what she meant when she wrote that note.

All changes in a record are subject to the possible interpretation that they were not made at the time of the original note and that they are an attempt at deliberate subsequent editing. All notes should be initialed so that the nurse who made them can be clearly identified even years later.

While on the subject of notes and realizing that this audience is composed in a large part of supervisors, may I sound a note of caution about the habit some supervisors have of being over-candid in the records they keep of the performances of the nurses who are under their supervision. We have several times been embarrassed in our class by uncharitable comments made about younger nurses by their supervisors. Such remarks as "does not react well to discipline", "cannot make decisions on her own", "not suited to work in the pediatrics ward", "does not seem to get along well with children", and others along that line, have a tendency to come back and plague one, when astute counsel in a lawsuit insists on their production in court. Very often the question is, did the institution being sued, have any reason to know of previous acts of incompetency on the part of its nursing staff and a remark said sometime in pique or anger may subsequently prove very embarrassing. Such notes have appeared in relation to student nurses and when the students continue on as graduates in the same institution, we have several times seen an attempt made to draw an inference that what was said about the girls when they were students was still true of them as graduates.

Attention should be drawn to a group of operating supervisors of the constant need to record in full in writing the name and status of each member of the operating team and this goes beyond just the operating room. On the floor nursing, each visit made by a doctor should be carefully recorded. If the doctor comes every day, the record should not haphazardly show his name every fourth or fifth days as it does sometimes. This of course leads to an inference that a doctor does not regularly visit his patient.

It is of course the function of the nurses at a hospital to call a doctor when the patient takes a turn for the worse, particularly in hospitals which do not have an interne staff such as some of the smaller country hospitals. This is a duty which admits of no timidity in its discharge. The nurse must insist that the doctor come over to see his patient and if he says he cannot come or attempts to disagree with her opinion that the patient looks bad, she should appeal to the head of the staff of the hospital or some other senior doctor and see that the patient is visited at the earliest possible moment. We have seen several said instances where doctors thinking that a nurse was overalarmed, postponed his visit to the great harm of the

patient. We had one situation some years ago where the doctor took such a call and turned to the guests at the house he was at and said "That nurse thinks she knows more than a doctor" and he postponed his return to the hospital until the patient was practically dead from a postpartum hemorrhage. Other doctors were available in the community but the nurse was reluctant to call them for fear of starting a controversy.

Special Care For Senile Patients

Great care should be taken with senile or confused patients, particularly shortly after their admission. You must warn them not to get up out of bed for any purpose and if they show the least desire to do so, bedboards should be put on the bed. Habit is strongly fixed in the minds of some people and they anticipate that when they step out of a bed, they will meet the floor at a certain level. Unfortunately hospital beds are considerably higher than the average bed at a person's home and many a fractured hip has been sustained not because the patient fell out of bed but because he tried to get out of bed and then fell. If patients seem the least bit disturbed and disoriented, err on the side of safety and keep up the bedboards.

An operating room supervisor should see that before any emergency case is given an anesthetic, an adequate history is obtained concerning previous ingestion of food. Non-irritating anesthetics such as cyclopropane should not be given to a patient unless it is known that he has an empty stomach. If a boy is injured in a basketball game and is given a non-irritating anesthetic, his fractured arm may be set correctly but he may drown in his own vomitus from the contents of a meal he had a few hours before his accident. This is also true of automobile accident cases. As a matter of fact, such surgery should be done on emergency cases only to the extent that it is emergent. After a patient has had an anesthetic following an emergency accident and this is true as said above, of all anesthetized patients, he should never be left alone until he has fully reacted from the anesthesia. Great care should be taken following the delivery of a woman not only with the observation and care of the mother but with the newborn child. No child should be placed in any kind of a heated receptacle which has not been checked to make sure that it is in proper working order and fully protected against overheating. Several years ago, a suit was brought against a hospital in this City for an accident that had happened fifteen years before when a child was put in a heated bassinet. The side of the bassinet was so warm that the child sustained extensive shoulder and wrist burns and when the parents found out years later what it would cost to have plastic surgery done for these burns, they instituted an action. It is well to remember that a suit can be brought on behalf of a child up to and including its twenty-second year or one year after it has reached its majority. In another case, a child recovered against a hospital in this city because the heated bassinet had as an integral part, an asbestos pad which had been cracked, allowing excessive heat to come through from the bulbs below the pad. Since a young child does so much crying, its reaction cannot be judged as would an adult's and is not clearly indicative of its pain and suffering.

Removing Teeth During Operation

In the course of tonsillectomies done on children doctors sometimes after discussing the question with other doctors and nurses present, decide to remove teeth from the mouth of a child. Sometimes because they think the loose teeth are a hazard to their operation and less frequently, just because they think the teeth should come out and can't do the child any good.

This is a dangerous thing to do without the parents' consent. It indicates secondly, a situation that the surgeon should have known of before the child was anesthetized and had fully discussed with the parents. We recently saw a situation where a doctor took out twelve of the first teeth without the parents' consent only to find that the child's grandfather, an oral surgeon, had been carefully nurturing these teeth to preserve the bite which the child had. The case was settled.

In conclusion, may I say that all of the situations which I have discussed above are but illustrative of the problems which you face. One evening devoted to them cannot by any means exhaust everything that might be reviewed. As a layman, I feel I must compliment you on devoting your spare time to evenings such as this in which you seek by a discussion of your problems to improve upon your already high standards of the unselfish work to which you have devoted your life.

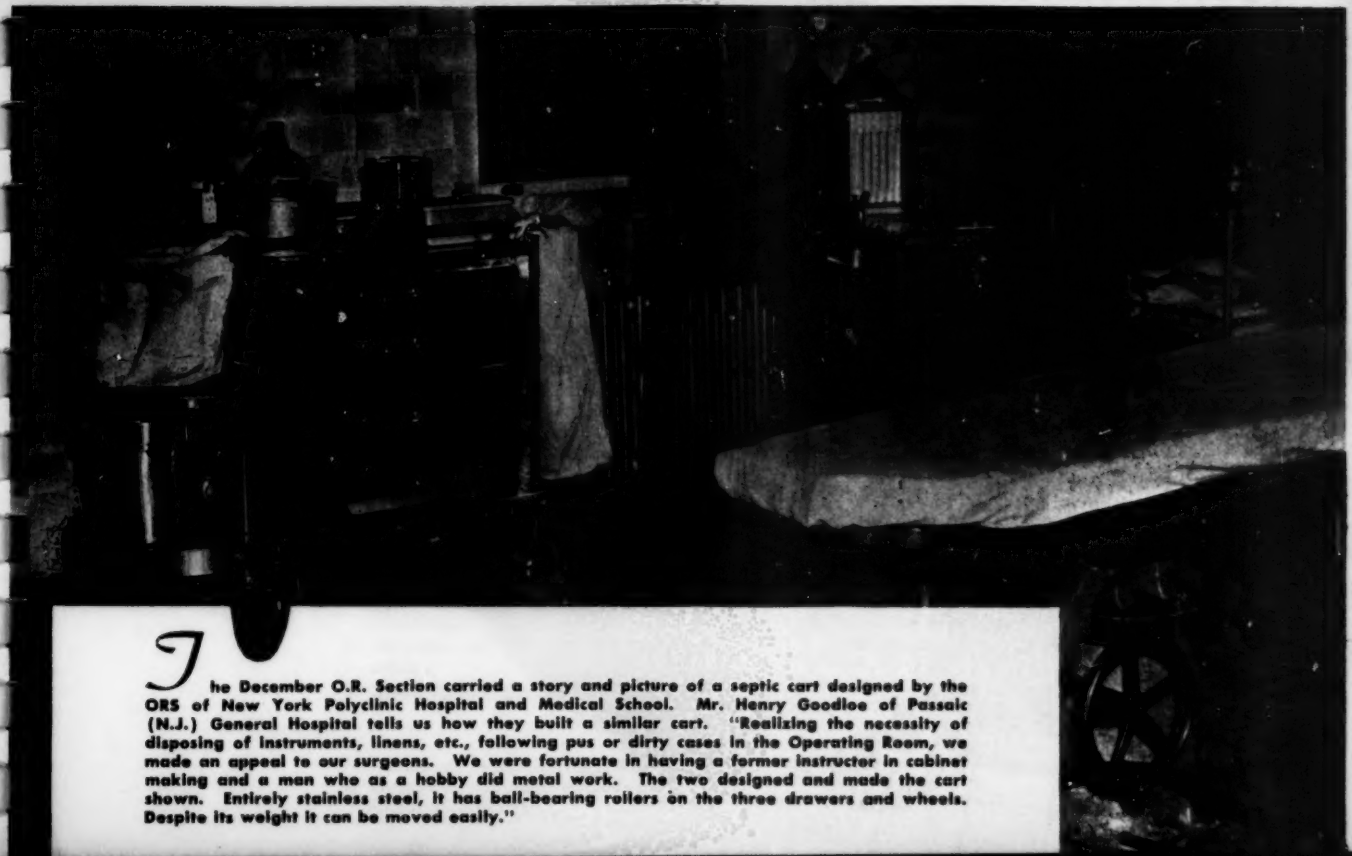
♦ The cart described here is patterned after cart designed by Dr. Carl Walter, Boston.

♦ Use of Special Septic Cart

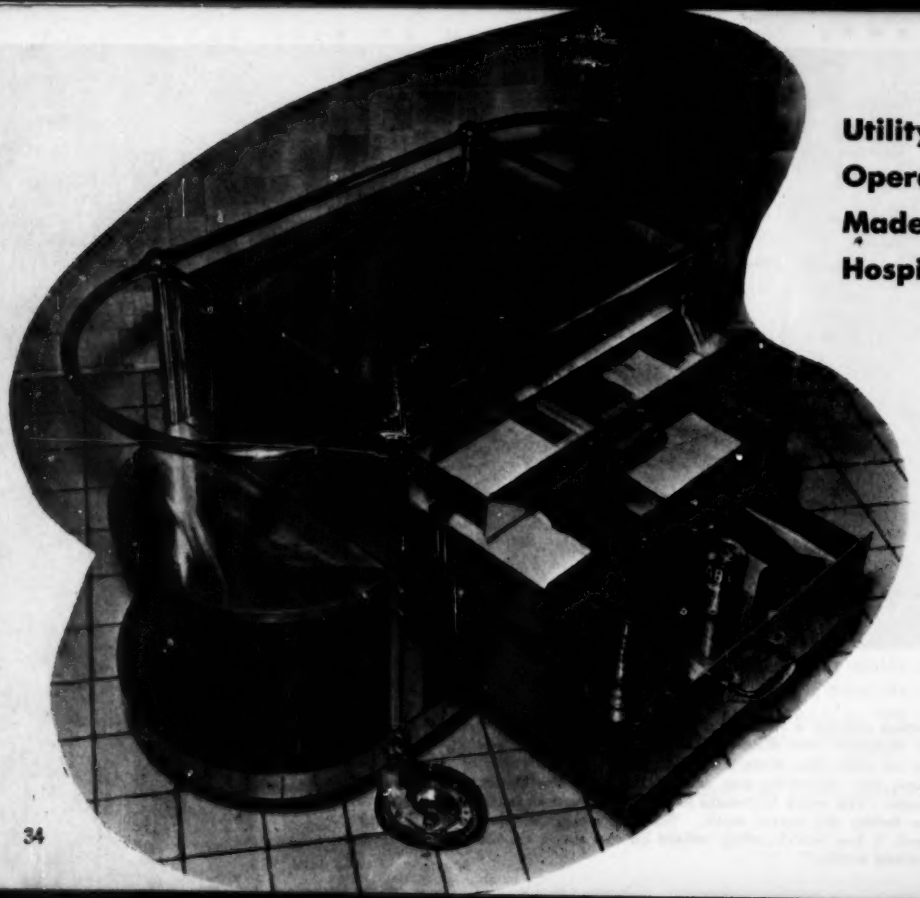
The O. R. Supervisor of Passaic General Hospital tells us how they use the special septic cart built by two of the hospital's personnel for their operating room.

Upon completion of a septic case (ruptured appendix, intestinal work or rectal work) the circulating nurse wheels in the septic cart, removes all the container covers and places the carrier from the washer pressure sterilizer on the instrument table. The contaminated instruments are placed in the carrier. All the used gloves are washed and wrapped in a towel and placed in the carrier. Instruments such as scissors and knives, are cleaned and put in Zephiran Chloride, 1:1000, and all needles are deposited in a container and covered with Bard-Parker solution. The long containers are used for rubber tubing, like catheters, rectal tubes and suction, and the square container is used for soaking unused catgut tubes and syringes. Zephiran Chloride, 1:1000 is used for all but the needle container.

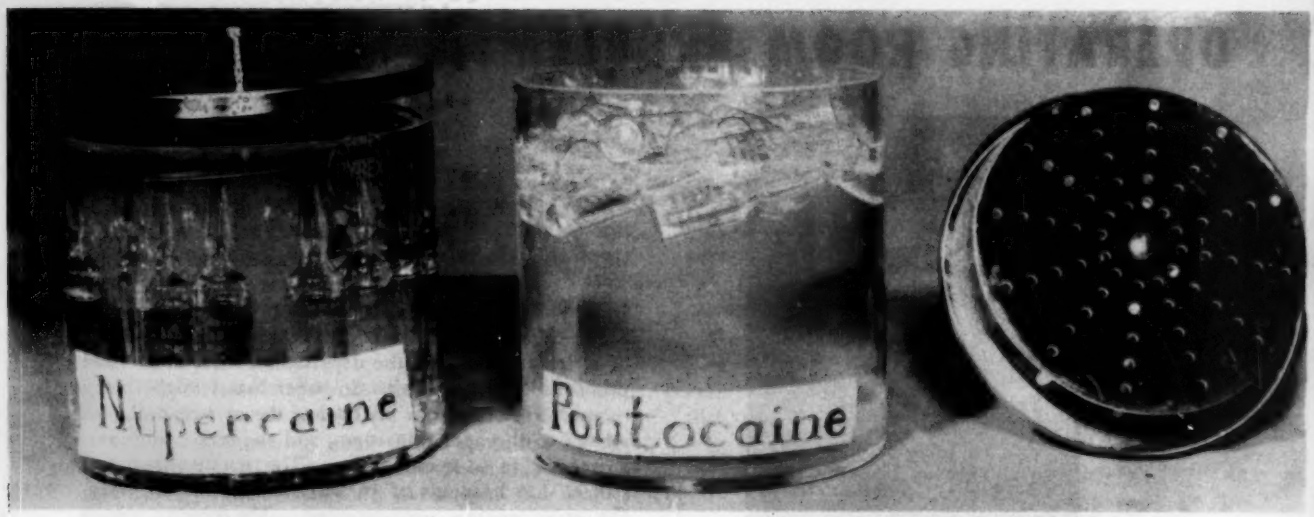
The waterproof bags on the bottom shelf are used to line the floor pails during the operation and for receiving the dirty sponges. Clean linen and sponges are put with the clean basins in a small canvas bag at one end of the cart which is later taken to the sterilizing room. A large canvas laundry bag, on the other side of the cart is used for soiled linen. The surgical specimen taken at the operation is placed in a bottle from the drawer and taken to the laboratory for proper marking.



The December O.R. Section carried a story and picture of a septic cart designed by the ORS of New York Polyclinic Hospital and Medical School. Mr. Henry Goodloe of Passaic (N.J.) General Hospital tells us how they built a similar cart. "Realizing the necessity of disposing of instruments, linens, etc., following pus or dirty cases in the Operating Room, we made an appeal to our surgeons. We were fortunate in having a former instructor in cabinet making and a man who as a hobby did metal work. The two designed and made the cart shown. Entirely stainless steel, it has ball-bearing rollers on the three drawers and wheels. Despite its weight it can be moved easily."



Utility Cart For Operating Room Made By Hospital Personnel



• Showing storage jars for sterile ampules as used at the New York Polyclinic Medical School and Hospital.

1. Pyrex jar, 6 x 6 inches in size, with stainless steel cover to which a perforated diaphragm is attached.
2. Ampules covered with disinfecting solution to which vegetable dye has been added.
3. Steel diaphragm keeps ampules submerged.

Advantages:

No gauze or weight is necessary to keep ampules down.
If ampule is cracked colored solution seeps in and is easily detected, acting as a safeguard to patient.

OPERATING ROOM PROBLEMS,

By: *Marian L. Fox, R. N.*
Chairman of the New Orleans Operating Room Association

IN A GENERAL HOSPITAL the operating room is the hub-of-the-wheel of activity. A busy day in the operating room is indicative of the tempo of the wards, laboratories, central supply room, laundry, and other departments.

Regardless of the size of the hospital or the number of operating rooms in the department, there are certain problems common to all. In order that I might bring to you ideas other than my own of the current problems related to the operating room, and suggested solutions, I resorted to a questionnaire. The questionnaire was sent to 125 hospitals of various sizes and types; sixty-five questionnaires were returned. The prompt replies and interest shown was very gratifying.

The questions that were presented to the hospitals follow. The conclusions gathered from the replies will be discussed in each case.

1. How do you control non-emergency cases from being scheduled as emergency?

Many admitted that their efforts to control this practice have failed. One mentioned a surgical committee that rules on such problems. Another stated that specimens were sent to the laboratory and if findings were questionable the doctor was brought before the surgical board. Still another hospital limited surgeon's elective surgery.

2. Must non-emergency cases be scheduled by a certain time the previous day, and if so, at what hour?

The average posting hour ended at 4:00 P.M. the previous day. All except a few small hospitals enforced this ruling. Many hospitals stated that they had a definite hour for operative admissions.

3. What is the time limit for late surgeons?

Time ranged from fifteen minutes to one hour, the average time being twenty minutes.

4. Are delayed operations automatically canceled

Twenty per cent canceled operations after a specified time unless the surgeon called. The others permitted him to do the case either upon his arrival or as soon as the schedule permitted.

5. Is a report of delayed, emergency, and canceled cases sent to the administrator's office?

Forty-five per cent send some type of report of emergency cases. One supervisor mentioned sending a monthly report to the administrator and included in that any infringement of the rules.

6. Is a daily operating room schedule sent to each department?

Sixty-five per cent send daily operating room schedules to each department. The size of the hospital did not seem to affect this practice.

7. Are visitors, other than medical and nursing personnel, allowed in the operating room as observers?

Ninety-three per cent said "no". Seven per cent said "yes, with the consent of the hospital administra-

tor." Several voiced the hope that they could discontinue this practice.

8. Do you have a recovery room?

Only eight per cent said "yes." Several mentioned that a recovery room was included in their building plans.

9. Do your graduate nurses take night call? If so, what compensation do they receive?

All except the larger hospitals required their operating room nurses to take call. Compensation for night call ranged from $10.00 additional staff nurse salary to $1.00 for every night on call and $4.00 when called. Still another hospital stated that they gave time-and-a-half if called. The gross salary for suture nurses ranged from $115.00 to $240.00 per month.

10. Does your purchasing department understand your particular needs?

Eighty per cent said "yes," that they did; the remaining twenty per cent stated a very emphatic "no." One mentioned the difficulty of having to purchase through a city purchasing agent.

11. Are you having difficulty securing supplies?

The answer "yes" was almost unanimous.

Greatest Problem

The final question was: "What do you consider your greatest problem?" All except two admitted that they had problems. I shall give their answers in the order of frequency mentioned.

1. Shortage of experienced, capable energetic operating room nurses.

2. Shortage and poor quality of supplies; especially linen, instruments, and rubber goods.

3. Shortage of student nurses, and limited time to teach them.

4. Inadequate working space.

5. Inadequate storage space.

6. Incompetent maintenance service, including poor laundry service.

7. Lack of cooperation of older doctors in scheduling operations.

8. Lack of interest on the part of the younger doctors and nurses for the welfare and safety of the patient.

9. Coping with various personalities — keeping the nurses happy when on call.

10. Lack of cooperation of auxiliary workers.

11. Volume of work far exceeding personnel and operating space.

One supervisor added to her comment, "A little more of the 'golden rule' by both the surgeons and the nurses would solve most of today's problems."

Suggested Solutions

1. In order to control delayed, questionable emergencies, and cancellations, I would suggest that a twenty-four hour report be sent to the hospital administrator each morning. If the administrator will review these reports at the end of each month, he will usually find that the offenders are a few "repeaters."

2. I would suggest that the scheduling for the following day be completed by 4:00 P.M., and that special services have designated days for operating. This schedule could be so arranged that the operating load would be fairly evenly distributed over the week; that is, so that each day's schedule would not reach the point beyond the safety margin.

3. That operative orders be written by 4:00 P.M. the day preceding the operation.

4. That no operations except emergencies be scheduled for Saturday afternoon, Sundays, and holidays; operating rooms must be given a breathing spell.

5. Let it be understood that the time scheduled implies the time the operation is to begin, not the time the surgeon arrives in the department. Doctors who are repeatedly late might be brought before the medical board. They should be made to realize that one delayed operation disrupts the schedule for the remainder of the day. Each case should be dealt with individually.

6. I would send a daily operating room schedule to each department. This plan serves two purposes: First, the head nurses on all divisions will know where the surgical staff members are; and second, they will understand, and can explain to the patient's relatives, the reason for a delay or change in operating schedule.

7. Regardless of the size of the hospital, I would suggest that "Call Slips" be used. This slip should include the following information: Day, Name of Patient, Location, Service, Time of Operation, Operation. This is a precautionary measure. There are few operating room supervisors who have not experienced getting the wrong patient up at the right time.

8. If you have a secretary in the operating room, I would suggest that the information desk be notified when the patient is returned to his room. The information clerk is grateful for this additional information.

9. I would control the traffic in the operating room, and only permit those who have legitimate reason to enter that department. I would discourage tours through the operating room department.

10. I should like to think that, in time, every hospital of over 200 beds will have a recovery room. It is the only safe and economical way to care for postoperative patients.

11. To the purchasing agent let me make a plea for the operating room supervisor. Learn her needs and make every effort to fill her needs and make every effort

to fill her requests. She is not "just being difficult" when she refuses to accept the hemostats that were picked up from surplus supplies. No one knows better than she does the likes and dislikes of the surgeons.

12. All hospitals with a heavy emergency service should provide twenty-four hour nursing service. To relieve the shortage of nurses, positions must be made more attractive; adequate compensation for night call; provision for advanced work; consideration of personalities when assignments of cases are made, such as placing a nurse in the speciality she prefers. We all do our best work in fields that we like.

13. In a city with two or more hospitals, much could be accomplished if the operating room supervisors met occasionally with the idea of pooling ideas for simplifying procedures, standardizing techniques, and sharing ideas for teaching programs for their students.

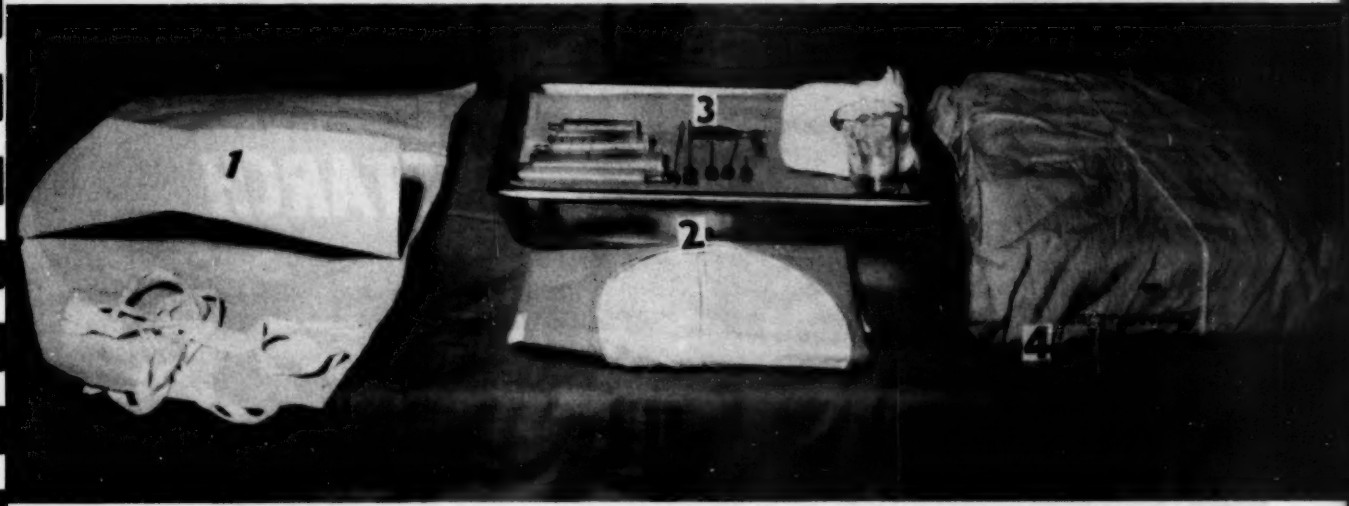
In conclusion, I would suggest that hospital administrators and medical boards review the rules and regulations applying to the operating room. Discard the obsolete one and those impossible to enforce. Publicize these rules, and then stand back of the operating room supervisor when she tries to enforce them.

I would make it clear to the surgical staff that the educational program for the student nurses is just as important as that of the intern and resident. Few complaints are ever voiced if surgeons are asked to schedule non-emergencies around staff conference, but I have yet to hear a doctor graciously accept need for considering the student nurses' class schedule.

The operating room supervisor usually plays a lone hand. Few hospital administrators understand her many problems. She is one of the key people on the nursing staff. If you are so fortunate as to have an experienced, capable, sympathetic operating room supervisor, treat her kindly, she is a rarity.

Tips for the O.R.S.

Most surgeons perspire freely while operating. Using just any old piece of cloth and any thickness to mop the brow does not agree with their skin textures or their dispositions. A small hand towel will do the job nicely. It should be wrapped around the wrist with an elastic band so no loose ends fly about. A gown can be easily contaminated by a thread or speck coming off at the wrong time.



• Showing method of preparing Spinal Set, as used at the New York Polyclinic Medical School and Hospital.

1. Cover made of double thickness muslin, *(similar to type recommended in "Aseptic Treatment of Wounds")*
2. Sheet for draping, size 24 x 30 inches with a double faced six inch hole in center.
3. Tray with articles necessary for a spinal anesthetic.
4. Tray covered, tied and ready for autoclaving.

Advantages:

Sets are stored sterile and ready for use.
Anesthetist able to help himself, no other set-up necessary.
Smaller tray may be used in same manner for local and intra-venous anesthesia sets.

The STARCH Sponge

Valuable for Its Ability to Effect *Rapid* Coagulation of Blood

● A surgical sponge, made of starch and capable of absorbing 16 times its weight in water and appreciable amounts of medicaments such as penicillin, gramacidin, sulfapyridine, etc., has been successfully used in clinical experiments as a hemostatic agent. Readily absorbed by the body, the sponge may be the answer for the surgeon who finds he has "lost" a sponge in the operating field.

Developed in 1947 by Drs. Rice and MacMasters of the Northern Regional Laboratory of the U. S. Department of Agriculture, the sponge is a physical modification of starch brought about by slowly freezing starch paste or gel at a temperature a few degrees below the freezing point of water.

The sponge, now in clinical use, is prepared from commercial cornstarch which makes a firmer sponge than wheat or potato starch. When the freezing process is completed the mixture is allowed to thaw. After thawing, excess water is squeezed from the sponge. If wet sponges are to be used they should be stored in 70 percent ethyl alcohol.

Dry sponges can be sterilized when wrapped in heavy paper and tied with string. The sponge must be dried immediately after sterilization—this can be done by using the autoclave under vacuum or by subjecting the sponge to 95°C. in a drying oven for one hour.

Dr. Samuel S. Rosenfeld of the Departments of Obstetrics and Gynecology, The Jewish Memorial and Lebanon Hospitals, New York City, has conducted a number of experiments using the sponge as a hemostatic agent. He has sought to determine the action of starch in the presence of hemorrhage and its effect on the peritoneum.

Dr. Rosenfeld reported that the sponge was used in 53 gynecologic and obstetric patients to control bleeding. Intraperitoneal applications were made in 20 patients; in the course of operations such as hysterectomy, myomectomy, and in one case of a ruptured corpus luteum cyst of pregnancy. It was used in nine cases of caesarean section; in seven of these patients it was used to control bleeding on the uterine surface, and in two patients the sponge was introduced into the uterine cavity, via the uterine incision.

An intrauterine application of gauze bandage impregnated with starch sponge was performed on the second post-partum day of one of Dr. Rosenfeld's patients who suffered a severe post-partum hemorrhage despite the fact that the uterus and vagina were tightly packed with gauze. This patient had a splenectomy at the age of 12 years because of thrombocytopenic pupura. On the basis of this history the obstetrician had taken the precaution of giving her transfusions before and after delivery and tightly packing the uterus with plain gauze. Despite these precautionary measures a severe hemorrhage ensued and she exhibited many of the signs and symptoms of impending death. The gauze pack was removed and a starch sponge pack introduced. The bleeding ceased almost immediately, and she was discharged from the hospital in good condition on the 11th post-partum day.

Dr. Rosenfeld reported another case of a woman patient about 70 who had a prolapse of the uterus and had worn a pessary for many years. Her doctor removed the pessary because of pressure symptoms and after several weeks made an attempt to reinsert it. The vaginal walls had sustained lacera-

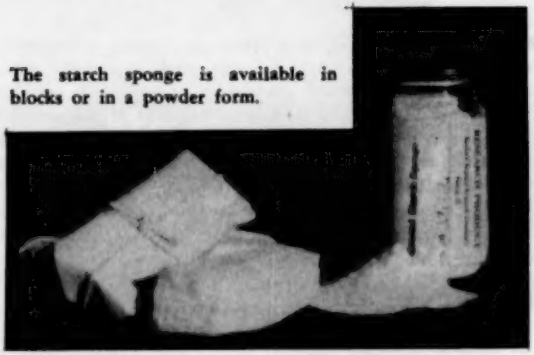
tions, however, and hemorrhage ensued. Several vaginal packings of plain gauze were ineffectual in controlling the bleeding. She was admitted to the hospital where the gauze pack was removed and starch sponges substituted. The sponges were kept in position by placing a small amount of gauze in the vaginal orifice external to the outermost starch sponge bar; bleeding was promptly controlled.

Dr. Rosenfeld concluded that the starch sponge is an efficient hemostatic agent. Its effects appear to be purely local and its hemostatic action is probably due to its gel formation. It can absorb many times its weight in blood which causes the sponge to swell and exert pressure, thus forming a mechanical obstruction to the flow of blood.

Since the sponge is soft and fragile when wet, its removal does not reinitiate hemorrhage and is painless to the patient. Any shreds left behind are readily broken down and harmlessly absorbed.

Powdered starch sponge can be sprinkled upon a bleeding surface at the site of hemorrhage to produce hemostasis. Oral administration of the powdered sponge has been found effective in treating gastric hemorrhages. Bandages or rolled packs are also made by coating gauze with powdered starch sponge and rolling. Such packs have been found useful in controlling post-partum bleeding.

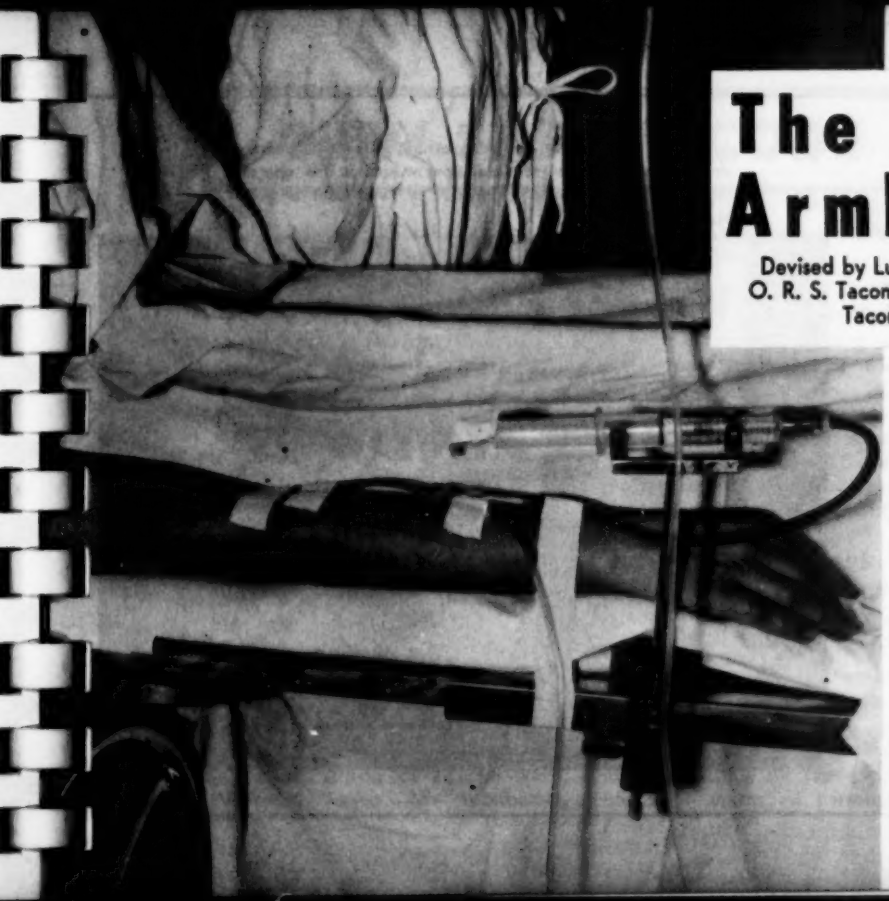
Abstracted from "Starch Sponge—a Hemostatic Agent" by permission of the author, Dr. Samuel S. Rosenfeld and SURGERY in which the article first appeared, Vol. 26, No. 5, 1949.



The starch sponge is available in blocks or in a powder form.

A cautery mitt is made of heavy unbleached muslin or light weight canvas about 10 inches long and made like a mitten with a place for the thumb. It is used to handle the cautery for hemorrhoids and appendix or in any other case where the cautery is used. It supercedes using a towel which drags over the field and gives more chance for contamination. The mitt is kept sterile at all times and is slipped over the sterile gloves when needed.

Contributed by:
A. Fuentes, R.N. O.R.S.
Columbia Memorial Hospital
Hudson, N. Y.



The Surgical Armboard

Devised by Lucille M. McDonald,
O. R. S. Tacoma General Hospital,
Tacoma, Wash.

An Aid to Operative Procedure

THE use of the antecubital space for the administration of drugs, fluids or blood during a surgical procedure presents problems of positioning and draping to prevent interference with the operative procedure.

The Surgical Armboard attachment is intended to eliminate the hazard of contamination and the inconvenience of draping and positioning. The arm opposite the side on which the surgeon expects to stand it prepared in the usual manner and the intravenous started. The arm is arranged in the optimum position, the sleeve is attached

and adjusted and draped simultaneously with the rest of the operative field.

The usual flurry incidental to avoiding contamination from the exposed arm and apparatus is eliminated. The annoying slipping of the haphazard arm drape is also eliminated. A sterile surface presents to the field and team at all times and the sterile drape maintains its efficiency in any position made necessary by a procedure change.

To avoid traction on the brachial plexus due to an abducted supinated arm many hospitals prefer to use a "J"-shaped shield to prevent pressure by members of the surgical team on the supinated arm, which is positioned at the patient's side with intravenous needle in place before the patient is anesthetized. The position is important when the patient is in Trendelenburg position and in procedures on the thorax and neck where the assistant forces the arm into abduction while trying to gain a position of advantage.

Below: Dr. Carl Walter answers questions following a demonstration on control of the explosion hazards in the operating room held in the amphitheater of Peter Bent Brigham Hospital, Boston.

NEW SAFETY CODE

THE National Fire Protection Association has revised its code of Recommended Safe Practice for Hospital Operating Rooms, and these valuable suggestions are now available in pamphlet form.

The NFPA Committee on Gases, which promoted the revision, was chairmanned by H. E. Newell, of the National Board of Fire Underwriters. George Buck, director, University of Maryland Hospital, was head of the Committee on Hospital Operating Rooms, which submitted the recommendations for changes.

Members of Mr. Buck's committee included representatives from the American Hospital Association, the American Medical Association, the American College of Surgeons, the U.S. Public Health Service, U.S. Navy, American Society of Anesthetists, American Association for Nurse Anesthetists, and others.

Recommendations are made on flooring, electrical connections, ventilation, location of operating room, together with handling of anesthetics and other safety measures.

The main point covered in the revision is emphasis upon reducing the possibility of electrostatic spark discharges, and the resultant ignition of flammable gases. That important phase we present here:

The elimination of static charges, states the Code, is dependent on the vigilance of the administration as to materials purchased, supervision and periodic inspection. *It cannot be too strongly emphasized that a partial chain of precautions will generally increase the electrostatic hazard.* Conductive flooring, for example, may be ineffective unless all personnel wear conductive shoes and unless all objects in the room are electrically continuous with the floor.

Regulations for Personnel To Eliminate Static Discharge

(a) All personnel entering storage locations for combustible anesthetics or anesthetizing locations must be in electrical contact with the conductive floor through the wearing of conductive footwear or an alternative method of providing a path of conductivity. Provision of conductive floors in corridors will minimize the possibility of static discharge from patients or personnel entering anesthetizing locations.

(b) Electrical connection of the patient to the conductive floor can be assured by a conductive strap in contact with the patient's skin, with one end of the strap fastened to the metal frame of an operating table meeting requirements previously specified.

(c) Because of the possibility of percussion sparks, shoes having ferrous nails which may make contact

with the floor should not be permitted in storage locations for combustible anesthetic agents or in anesthetizing locations.

The recommended method for electrically connecting all persons entering anesthetizing locations to conductive floors is through the wearing of shoes conforming to the following:

All shoes having soles and heels of conductive rubber, conductive leather, or equivalent material, should be so fabricated that the resistance between a metal electrode placed inside the shoe and making contact with the inner sole, equivalent in pressure and area to normal contact with the foot, and a metal plate making contact with the bottom of the shoe, equivalent in pressure and area normal contact with the floor, shall be not more than 250,000 ohms.

(d) Footwear or other personnel conductive devices to be introduced into hazardous locations should be tested on the wearer at least once on each day on which they are to be worn in such a location. Such test may be made by a direct reading ohmmeter, or similar approved instrument, indicating the resistance between two insulated electrodes so located that the wearer may stand in a normal manner with one foot on each electrode. The electrodes may be of some non-oxidizing metal such as stainless steel. Shoes in use, for which the indicated resistance between electrodes is 1 megohm or less, are considered safe.

Wool Items

Outer garments, blankets, or sheet covers of wool, or containing wool, must be excluded by hospital regulation from all anesthetizing locations.

Silk Fabrics

Fabrics of silk or of synthetic textile materials such as rayon or nylon, including "sharkskin", should never be permitted in anesthetizing locations as outer garments, hosiery, or for non-apparel purposes.

Covers for Anesthesia Equipment

Covers of fabric or of any form of sheeting should never be used on anesthesia equipment for the reason that a cover will confine gas which may leak from a cylinder. When the cover is removed from the anesthesia machine under such conditions a static charge may be created which will ignite the gas beneath the cover.

Conductive Flooring

The entire floor surfaces of all the storage and anesthetizing locations, as well as rooms and corridors directly connected with them are to provide a path of moderate electrical conductivity between all persons and equipment making contact with the floor, says the Code. Special grounding connection need not be installed, unless desired, or required by the inspection authority.

Maximum resistance of the conductive floor shall be less than 500,000 ohms as measured between two electrodes placed three feet apart at any points on the floor.

For additional protection against electric shock, the resistance of the

floor shall be more than 25,000 ohms, as measured between a ground connection and an electrode placed at any point on the floor, and also as measured between two electrodes placed three feet apart at any points on the floor.

Testing Method

The method of test for floor protection is to have the floor clean and dry, and the room free of hazardous gas mixtures. Each electrode used shall weigh 5 lbs. and shall have a clean, dry, flat but resilient circular contact surface 2½ inches in diameter (a cylinder of metal with one end faced with a disc of conductive rubber or faced with metal foil backed by soft rubber is suggested as a suitable electrode). An ohmmeter of suitable range shall be used which will maintain a voltage between 90 and 500 volts across a resistance of 1 megohm. For the safety of the operator, the short circuit current of the instrument should be less than 10 milliamperes. For each determination of resistance, the results of at least three measurements with the electrodes in slightly different positions on the floor shall be averaged. At least three such determinations, at widely separated areas on the floor, shall be made.

Testing and Maintenance

The resistance of conductive floors and conductive equipment should be initially tested prior to use, as described. Monthly tests should be made thereafter. These can conveniently consist of measurements of the resistance between an electrode placed on the floor and an electrode placed successively on each major article of furniture in the room. Additional tests of any individual item should be made if the measured resistance exceeds 2 megohms. The results of the tests should be recorded and permanent records should be maintained.

To be effective, conductive floors must not be insulated by a film of oil or wax. Any waxes, polishes or dressings used for floor maintenance of conductive floors should be of an electro-conductive type.

Furniture

All furniture shall be constructed of metal or of other electrically conductive material to provide an electrically conductive path to the floor. Surfaces on which movable objects may be placed should be without paint, lacquer or other insulating finish. Casters, tires or leg tips shall be of metal or conductive rubber, or equivalent material, or the furniture shall be equipped with drag chains.

If conductive tires, casters or leg tips are used, the resistance between the metallic frame of the furniture and the metallic plate placed under one supporting member but insulated from the floor, shall not exceed 250,000 ohms, measured with a ohmmeter of the type previously described. If drag chains are used, they shall be of non-ferrous metal and shall have no lacquer or other insulating finish. They shall be connected so that they

introduce no tripping hazard. With the furniture resting on a conductive floor meeting the requirements previously specified, the resistance between the metallic frame of the furniture and an electrode placed nearby on the floor shall not exceed three times that between two electrodes placed three feet apart on the floor when measured with electrodes and an ohmmeter of the type previously described.

Mattresses and Pads

All rubber sheeting, and the covering of all operating tables and stretcher pads and of all pillows and cushions shall be fabricated from sheeting of conductive rubber or equivalent material. The resistance between two electrodes placed not more than three feet apart on the same surface, and also on opposite surfaces of the sheeting or pad assembly, shall not exceed 500,000 ohms when measured with electrodes with an ohmmeter of the type previously described.

Rubber Tubing and Parts

Unless the objects to which they are fastened are electrically connected together, all rubber or equivalent parts of operating room equipment, such as the breathing tubes and gaskets of anesthesia machines, and all suction and pressure tubing, shall be of conductive rubber or equivalent material. The resistance between the objects with the rubber in place, when measured with an ohmmeter of the type previously described, shall not exceed 1 megohm.

Belting

All belting used in connection with rotating machinery shall have incorporated in it sufficient conductive material to prevent development of electrostatic charges. A conductive pulley should be used. (Note: conductivity of the path from pulley to the ground should be considered. If ball bearings are used, the contact between the balls and the races will probably be sufficient when bearings are lubricated with graphited oil or grease. If sleeve bearings are used, some means of conducting the charge from the pulley should be provided.)

Plastics

Parts of hard rubber, bakelite, or any plastic material which is a nonconductor of electricity, shall not be used on any equipment or instrument, except where necessary as alloplastic devices, bacterial barriers, as electrical insulators on an approved device, or as heat insulating handles.

Mechanical Intercoupling

Use of an intercoupler system, including the patient, the anesthetist and anesthesia machine is not recommended as an alternate for conductive flooring, because of the difficulty of properly maintaining it, and because of tripping and other hazards the intercoupler system introduces. Even with a properly maintained intercoupler there remains the possibility of static discharge to the intercoupled system from persons and objects not

connected to it. In existing anesthetizing locations, pending installation of conductive flooring and other electrostatic safeguards, the hazards of the use of intercoupling methods must be recognized and such methods employed only with full recognition of the hazards involved.

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NO STAT is a device designed to effectively ground personnel to conductive floors in the operating suite, and assure drainage of dangerous accumulations of static electricity.

Body-to-floor contact is maintained by a circlet worn on the leg or around the waist, a connecting bead-chain and a floor contact button built into an adjustable shoe clamp. The device is easy to put on or take off, and eliminates the need for conductive shoes or stockings.

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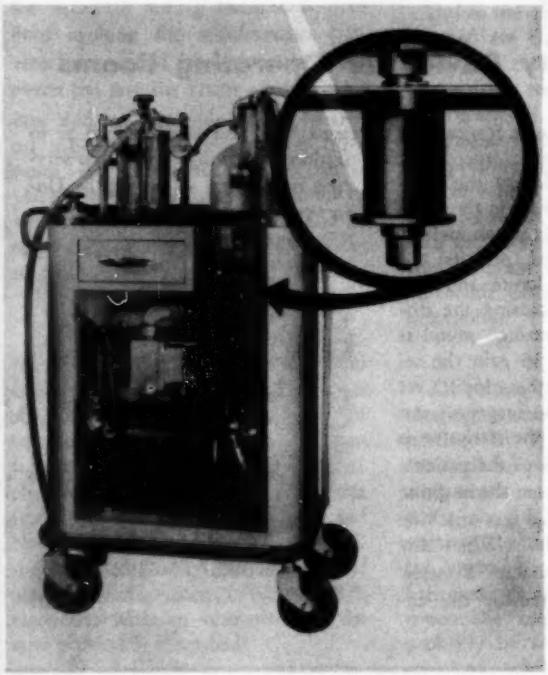
New Safety Device for Operating Rooms

The Lorhan-Webster Staticator is a new and simple electronic device that immediately detects the presence of static electricity in the operating room . . . sets up an audible warning signal and permits the anesthesiologist to locate and correct the condition causing the disturbance. The "buzzing" sound is sufficiently audible to gain the attention of the anesthesiologist, yet does not distract the surgeon. An antenna wire from the staticator is attached to the mask of the patient; two ground wires from the machine are connected to the gas machine and operating table. When any moving object produces a static charge, it is detected by the antenna wire and amplified so as to produce a warning signal. No servicing necessary. Approved by Underwriters Laboratories, Inc.

Valve Prevents Overflow



Gomco Surgical Manufacturing Corp. has just announced a new method of providing positive protection against overflow for its Explosion-Proof Hospital Cabinet Model Suction and Suction and Ether Units.

The new valve, produced under the trade name GOMCO AEROVENT, automatically cuts off suction in the units when fluid in the suction bottle reaches a pre-determined weight. This prevents any possibility of damage due to a flooded pump. When, during operation of the suction or suction and ether unit, the fluid in the suction bottle reaches the pre-determined weight, the line is opened, suction is cut off, and no damage is done. The operator then simply empties the bottle. This enables the pump to be back in operation within a few seconds. There is nothing to change, no replacements to make while the pump is in use. See photo at left.

New Anesthesia Parts

Protection against the operating room hazard of static sparks is provided by the new rubber conductive parts developed for all Heidbrink anesthesia apparatus.

Instead of the conductive coatings used in the past, the new development incorporates the conductivity as an inherent property of the rubber. All checking and recoating formerly needed to restore conductivity are eliminated. Laboratory and field tests show that the "built-in" conductivity lasts throughout the normal life of the parts. All

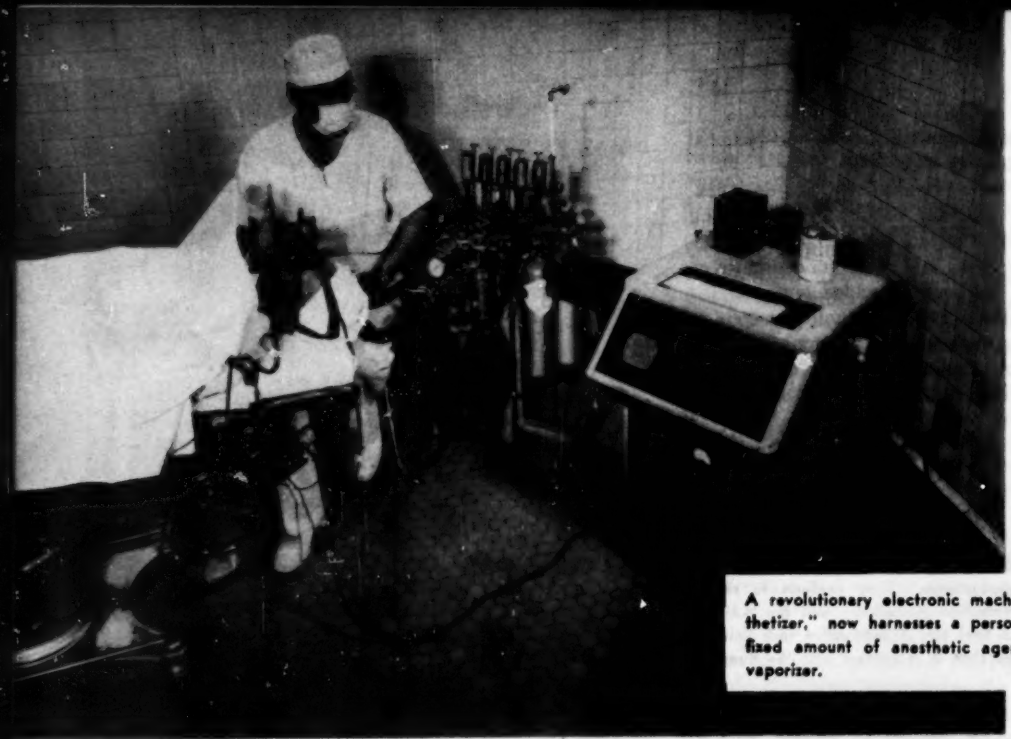
current conductivity requirements specified by the National Fire Protection Association are met.

Sterilization does not impair conductivity, nor does flexing of the bag, normal stretching of inhaler tubings and head strap, nor manipulation of face inhaler bodies. Laboratory tests show that the aging and oxidation resistance of the rubber is similar to the present molded types.

Steam sterilization cycles at 250°F., including a cycle as long as eight hours, had no serious effect, nor did such reagents as ether, alcohol, liquid soap, and a five percent solution of a phenolic disinfectant.

Conductive Sole Shoes

These shoes serve to ground body static before it can cause a spark in anesthetic atmospheres. They conform to recommendations of the National Fire Protection Association and the A.H.A. They have a conductive sole and heel plus a conductive sock lining that insures grounding whenever one shoe is in contact with the floor. These are two styles available.



A revolutionary electronic machine, called the "servo-anesthetizer," now harnesses a person's brain waves to pump a fixed amount of anesthetic agent into a vein or an ether vaporizer.

by Irving Wilson Voorhees, M.D.

Anesthesia Hazards In Operating Rooms Can Be Reduced

EXPLOSIONS in operating rooms resulting in death or serious injuries, have been reported now and then from various hospitals throughout the country. To be sure these are infrequent, but they must be eliminated entirely since this is possible and neglect to insure safety is inexcusable.

Under date of July 1, 1950 the Presbyterian Hospital, New York City, has supplemented its protocol of December 1948 and has set down very definite rules and regulations governing the use of explosive anesthetic agents in operating rooms. There are five such agents which are potentially explosive, namely: cyclopropane, ethyl chloride, ethyl ether, ethylene and vinethene.

Two basic facts underlie any list of precautions. First, there must be no escape of such fumes into the free air of an operating room. Therefore, all equipment must be kept in the best possible condition. Use of worn or leaky mechanical material is forbidden.

Secondly, any room in which an anesthetic is given has certain hazards which are well known, but which may be unobserved both by personnel and visitors. One of these is an electric spark produced by friction or poorly insulated wiring which may cause "a short."

Attention is called to the "potential hazard" at all times, no matter what precautions are being taken. Visitors, knowing nothing of danger, may cause friction when moving about the room and thus ignite any free gas around them.

Reprinted, permission of Nursing World, September, 1950.

Body Electricity May Be Hazard

It has not been proved or disproved that the electricity of the body, especially on a cold day, may be a hazard. We all know the parlor experiment of skidding across a carpet and producing a startling spark from somebody's chin. An electrical human body potential is, therefore, a proven fact, but not its possible misguidance to bring harm.

Instances have been known where some visitor has opened a door admitting him to the operating room, and an explosion ensued which seemed fairly inexplainable. This matter of electricity is tricky as everyone knows who has handled so harmless an object as a flashlight, which is often noted for its undependability.

Naturally, the surgeon and anesthetist must confer and decide upon the anesthetic they prefer, but those listed above must not be used in any room where the flooring is ***non-conductive.*** Whenever any of the five potentially explosive gases are used, the following precautions must be observed and checked:

1. The machine to be used in administering the gas must be thoroughly inspected and tested by the anesthetist. Any leakage puts the machine out of use.

2. The O.R. table or stretcher must be coupled to the patient before starting the anesthesia, and this intercoupling must be maintained during the entire administration and as long thereafter as an explosive atmosphere is prevalent.

3. The shoes of all persons entering the room must have been tested for satisfactory conduction preceding such entry.

4. All equipment in the O.R. must be supplied with drag chains in order to maintain a conductive path to the floor. Everyone present is charged with seeing that these chains maintain floor contact.

5. No conductive fabrics such as silk, wool or synthetic textiles of any kind such as sharkskin, nylon, rayon, nor orlon are permitted in the O.R.

6. Woolen blankets are strictly forbidden in the O.R.

7. The O.R. table must be covered with a pad of non-conductive material.

Monthly Inspection

At least once a month the engineering staff and other personnel must jointly inspect and test the conductivity of floor intercouplers and functioning drag chains. A written record is to be made of the status quo in every instance.

No electrical devices of any kind are to be brought into the O.R. unless approved by the engineering staff. This applies to "pet gadgets" of the surgeon as well as to other personnel.

Electrocautery, electrocoagulation and other spark-giving devices are to be used only if, in the judgment of the surgeon, a patient's life would be jeopardized in the absence of such equipment. It rests upon the anesthesiologist to enforce all regulations since it is he who in the last analysis is chiefly responsible for the patient's life.

All of this reads well, and looks practicable *on paper*, but our guess is that enforcement can never be obtained outside of a strictly militarized institution. You simply cannot train civilians to meet any such obligations while they still remain civilians. When they are inducted into the military, and well-trained, almost any rigidity is possible.

A second wager is likewise to be offered, namely: that nobody and no group is going to be willing to undertake such a regimen.

Here is the old cliché of the game and the candle. Are the benefits to be obtained worth all the fuss and feathers? Since we have now such excellent drugs as pentothal sodium, which can be used so well intravenously, will the trend of the new agents be *not toward*, but *away from* gases of all kinds? Even ether and chloroform may yet go into the discard. It is up to the chemists, through synthetic procedures, to invent drugs which are as harmless as it is humanly possible to make them, to experiment on animals, to remove any lethal factors, and then apply what has been learned to the surgical patient.

Are we coming further into the machine age, so far indeed that a robot may "see" the patient through his anesthesia? Not as yet, but a new gadget has just been invented which suggests the question.

At the recent convention of the A.M.A., San Francisco, California, a new machine invented at the Mayo Clinic was exhibited by Dr. Reginald G. Bickford, formerly an officer in the Royal Air Force, and now chief of the department of electroencephalography at Rochester, Minn.

Machine Used Successfully

This machine has been used successfully in more than 50 patients and is called a "servo-anesthetizer" nicknamed "the brain." Basically, the device depends upon the waves sent out

from the human brain. Fine wires, the end of which are sharp, are bent to form hooks which are fastened painlessly to the scalp and thus carry brain waves from the skull to the machine. A sort of relay system, activated by the brain waves, controls the rate of flow into the vaporizer or vein.

One can arrange or plan to have a fixed amount of the anesthetic pass over into a vaporizer or into a vein.

When the effect of narcosis begins to flag, the automatic mechanism administers just enough renewal to carry an even load. In this sense the apparatus acts like the thermostat on your refrigerator which goes into action the moment a certain lower level is reached.

The report made to the A.M.A. meeting by Drs. R. G. Bickford, Albert Faulkner, Jr., D. E. Soltero and Charles W. Mayo states that: "The automatic control is sufficiently accurate to maintain an uninterrupted state of anesthesia in animals for periods up to three days."

Dr. Mayo foresees the possibility of applying the new device to the study of neuro-psychiatric disorders.

The outlook according to Dr. Mayo is encouraging. He says: "Automatic anesthesia may even have a therapeutic value in certain mental conditions or physical states in which a constant degree of controlled rest and relaxation may be desirable."

But whatever happens, the human anesthetist will never be "out of a job" for no robot works long or well without human supervision.

Above: Examining the scientific exhibit on safety in the O.R. set up by Dr. Carl Walter are from l. to r.: Anita K. Szajnar, O.R.S., Veterans Hospital, Providence, R.I.; Roy Hudenburg, Hospital Planning and Plant Operation, A.H.A. and Mrs. Ann Hayes R.N., anesthetist, Veterans Hospital, Providence.

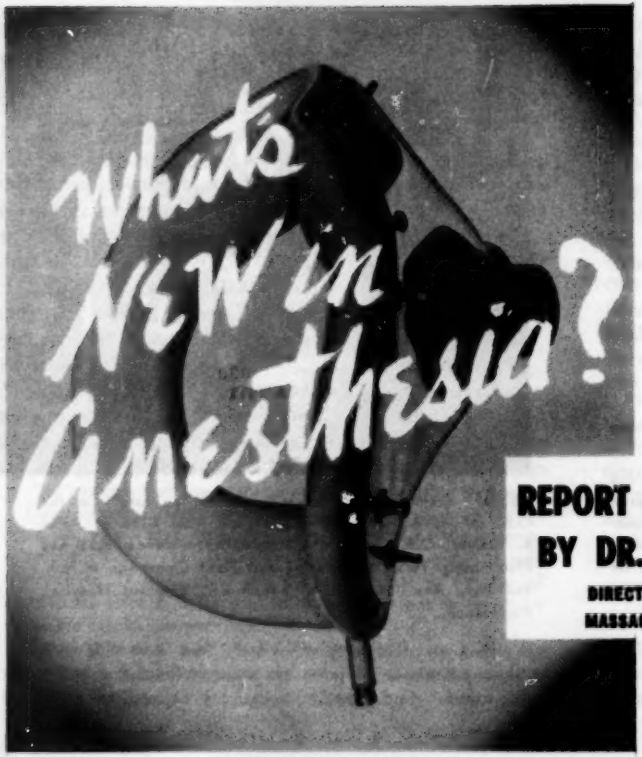


Illustration shows the Bennett "Tight Seal" Mask for anesthesia, metabolism studies and general oxygen therapy. It consists of a durable, lightweight, low dead air space, plastic face piece. The face cushion is made of soft rubber with a sponge rubber center. Easy to clean and worn bladders can be readily replaced without discarding the mask.

Fittings for all leading makes of anesthesia, metabolism and oxygen equipment are available. Made by Oxygen Therapy Sales Co.

REPORT OF A.P.M.A. PAPER BY DR. HENRY K. BEECHER

DIRECTOR OF DEPT. OF ANESTHESIA
MASSACHUSETTS GENERAL HOSPITAL

WHY HAS anesthesia not grown as might have been anticipated 100 years ago?

Because, in contrast to other specialties, it has been inadequately concerned with basic problems, and has developed in the clinic, instead of the laboratory. It has been delayed, for one thing, by our ignorance of the anesthesia process, Dr. Henry K. Beecher told the convention of the American Pharmaceutical Manufacturers' Association, in New York recently. Dr. Beecher is Professor of Research in Anesthesia at Harvard University, and Director of the Department of Anesthesia, Massachusetts General Hospital.

The first-rank problems of anesthesia are as fundamental and as difficult as any in medicine. The process is inextricably bound up with irritability of tissue, one of the most fundamental characteristics of life.

As clinical anesthesia is taught today, there is an almost overwhelming preoccupation with tools and their use. Unless it is taught in terms of principles, it can hardly rise above the status of a craft, Dr. Beecher said.

Harvard university is conducting research in 10 university hospitals, in an attempt to establish death rates for the several anesthesia agents, the various technics and the divers types of practitioners concerned. Conclusions so far indicate that "it is more risky to be a child or a negro than to be in other groups when anesthesia is necessary."

Studies negate the pat theory that "It isn't the agent that's important, it's the way you use it." "Both the agent and the technic used differ in their death dealing propensities," Dr. Beecher said.

Results reported in the literature on the metabolic effects of various anesthetic agents are varied. The "wild inaccuracy" encountered on the subject may be explained, for example, by such instances as when good chemists analyze blood, from animals suffering not only from anesthesia but from anoxia as well. A second error has stemmed from direct application of data obtained from animals, to man. For 25 years, for instance, ether has been said to produce acidosis, so has been avoided in favor of a more dangerous agent. Whereas, either may produce acidosis in dogs, but does not do so in man. Human physiology is less comparable to that of a frog or dog than some have supposed.

Harvard studies are underway on the metabolic effect of various anesthetics on the liver, a subject which must be fully understood "before one can aspire to a reasonable operative mortality rate for these new operations." Principles for the study of pain relieving agents have been evolved and applied to appraisal of a new family of narcotics, the methadons. Studies have proved the pain-relieving qualities of the barbiturates, and tests are being made as to the after discharge in the central nervous system.

Further experiments concern the electrical activity of the central nervous system with movements during sleep, and the influence of hypnotic drugs on them. Laboratory

studies have already demonstrated that with the onset of sleep, the origin of the electrical activity of the brain shifts abruptly from two foci near the occiput, to two foci near the frontal region. This is the first good objective sign of the onset of sleep, needed for years in the study of sleep physiology.

Recently devised psychomotor tests measuring the effect of nembutal a dozen hours after use will be applied to a study of the effect of this agent and others to the recuperative value of sleep, and the subtle effects of anesthesia on judgment, memory and reasoning.

Miscellaneous basic studies are concerned with the influence of the acidity of nervous system tissues on the effectiveness of barbiturate anesthetics. There is evidence that a respiratory acidosis can produce an acute metabolic acidosis, the study growing out of clinical observations that the carbon dioxide accumulation in man, in certain types of operation, approached lethal quantities.

Anesthesia for Outpatients

For the many minor surgical procedures and traumatisms requiring anesthesia in outpatients, a throrough knowledge of the agents employed is highly desirable. Patterson, of the Department of Anesthsiology, Allegheny General Hospital, has outlined some recommended procedures in **Pennsylvania Medical Journal, February, 1950.**

Local Anesthesia Safest

Safest for most minor procedures is local anesthesia. Although not frequently encountered, toxic manifestations should be anticipated. Most common of these is central nervous system stimulation, which can be counteracted with an intravenous barbiturate. Syncope is even less common, and is controlled by intravenous epinephrine.

Field block—injection of a local anesthetic in a diamond-shaped zone around the operative field—is preferred for many surface procedures. In fractures, direct injection of procaine into the lesion is quite effective. For finger injuries, metacarpal block may be found most useful.

In children, general anesthesia may be necessary because of lack of cooperation. In the event the child's stomach is full, the author prefers the following procedure to gastric lavage: take the child into the second stage of anesthesia slowly, thereby making vomiting almost inevitable without impairing the laryngeal and cough reflexes. With the stomach then empty, anesthesia may be continued at the desired level.

In the adult, precede pentothal sodium with atropine, even in short operations. In operations on the head and neck, an endotracheal tube is inserted awake. Because of the possibility of amnesia, a responsible person should accompany the patient following a general anesthetic.

(April, 1950, Surgical Notes)

How One Hospital Solves a Labeling Problem

Shown above are solutions of cocaine for swabbing and novocaine for injecting. To properly identify such solutions, one hospital uses labels encased in glass which are autoclaved with the instruments, then dropped into proper solution.

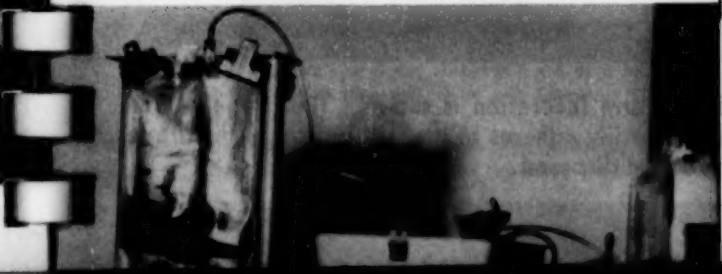
NEW BLOOD TRANSFUSION TECHNIC

Blood banks have been seeking a standardized donor set which will avoid vacuum, which does not make use of glass and which uses expendible and unbreakable equipment. Difficulties which occur in the regular process are the breakdown of red blood cells and untoward donor reaction because blood is taken too fast. The new technic was demonstrated to O. R. supervisors at the Center for Continued Study, University of Minnesota.

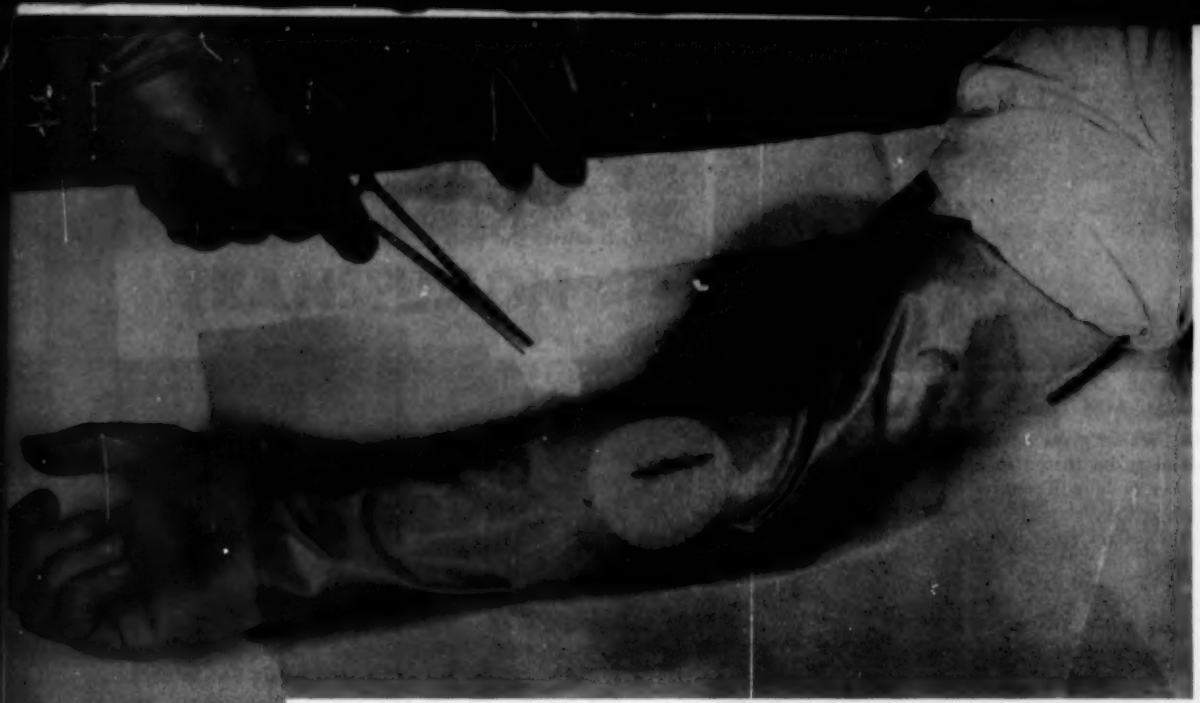
(1) Dr. Carl Walter, associate surgeon, Peter Bent Brigham Hospital, Boston, and his assistant, Dorothy Wysocki, inspect a blood donor set developed by Dr. Walter in cooperation with the Red Cross, which will eliminate many difficulties in transfusions. It consists of a plastic bag and plastic tubing. Absorptive resins in the tubing take out the calcium and magnesium and eliminate need for adding anticoagulants and preservatives to the blood.

(2) Dr. Walter demonstrates the procedure used in taking blood from the donor. The plastic bag suspended below the table receives venous blood After insertion of the needle blood is forced into the bag by venous pressure. Sucking the blood which causes the vein to collapse is thus avoided.

(3) Dr. Walter gives a tranfusion. The bag allows the blood to be forced in easily and at the speed which the body will receive it. The bag can be placed under the shoulder or hip of the patient and the weight of the body will force the blood into the veins.



(4) The blood is stored in the plastic bag suspended on a metal stand. Entirely air tight, the bag is specially constructed to allow the recipient tube to be connected safely at the time of transfusion. Dangers of breakage as with previous glass jars is eliminated. The bag could even be parachuted thousands of feet in safety.



Above: a treatment drape for treating an arm laceration is shown. The drape has an adhesive band bordering the hole which readily adheres to the skin and keeps the drape from slipping. After use the drape is easily disposed.

Plastic—A New Approach to Surgical Drapes

SURGICAL drapes that are moisture-proof and already-sterilized and that adhere to the skin upon contact, were introduced at the Cleveland meeting of the American College of Surgeons, Oct. 31-Nov. 4.

These drapes are made of green colored, soft draping, thin plastic film which is non toxic and unaffected by surgical solvents and detergents. A margin of pressure-sensitive adhesive holds the drapes to the skin. After use, the drape can be discarded.

The drapes were developed by three surgeons who during World War II found themselves handicapped by the lack of facilities for sterilizing surgical supplies. They saw need for a surgical drape that would demarcate an operative site, that was waterproof, and would not require skin clips and that was packaged as a sterile unit to be ready for use at all times.

After the war these surgeons, Drs. T. S. Gerspacher, H. D. Fowler, Jr., and D. E. Rolf of the Euclid Clinic, Cleveland, working with the Minnesota Mining and Manufacturing Company developed the new drape that met these requirements.

Four types are presently available:

Eye Drape: A plastic sheet 36 by 48 inches, large enough to cover a patient's head and chest, with a 3 by 2 inch elliptical hole that leaves only the orbital area exposed. The aperture has an adhesive margin.

Treatment drape: A rectangle 15¾ inches by 17, with an adhesive-edged center aperture 2½ inches in diameter; for minor surgery including removal of boils, wens, moles and toe nails, and for surgery of hand and fingers.

Perineal drape: A solid plastic sheet, 15¾ by 30 inches, with a 1½ inch margin of pressure-sensitive adhesive on one end. Applications include use in dilation and curettage of uterus, in plastic repair of vagina, and as upper towel in thyroidectomy.

Towel drape: A solid plastic sheet, 15¾ by 9 inches, edged with adhesive on one side; for draping extremities, for abdominal draping, and for bottom and side towels in thyroidectomy.

Although certain special technics may be used for each type, in general application consists of first opening the film envelope and removing the inner packet. Then the first protective inner wrap should be unfolded and with sterile precautions the second inner packet should be removed. The drape may then be removed and the protective liner covering the adhesive area stripped off.

Skin Is Prepared In Routine Manner

Before application of any of the drapes the skin area should be prepared in the routine manner and excess fluids should be removed with sterile gauze. Because of the complete isolation of the site afforded by these drapes, frequently less skin surface need be disinfected.

All drapes are steam autoclaved for forty minutes at 250° F. and bacteriological checks are made on each load before the

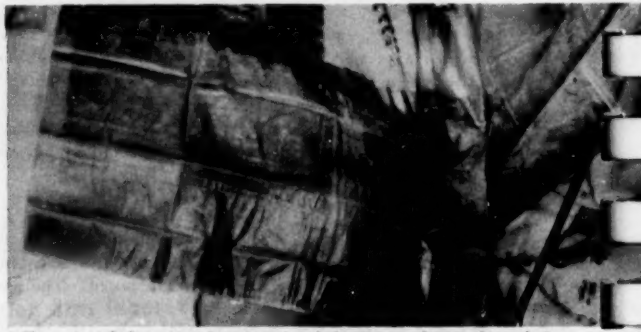
Draping for saphenous vein ligation, showing ability of plastic towel drapes to form an impermeable barrier over the area of the scrotum is shown above.

Use of a treatment drape on extremities is shown above in the draping of a finger.

drapes are released for distribution.

Extensive tests on the irritant and toxic effects of the drapes have been conducted. Clinical trials on 349 patients undergoing various types of surgery or treatment showed that no evidence of skin or wound edge irritation was noted in the entire series. In one group of 342 patients, the drape applications lasted for fifteen minutes to 4¾ hours. In seven other patients, adhesive applications lasted up to 30 continuous days.

A new departure in surgical draping technics the drapes have definite advantages: Drape is sterile and ready-to-use, seals off and demarcates operative site, remains in position without slipping, incisions may be extended through plastic sheet, non-toxic and inert, economical and disposable, easily stored, remain sterile indefinitely and eliminates soiling of clothes and towels.

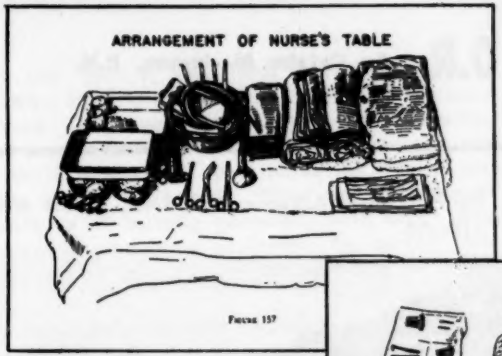


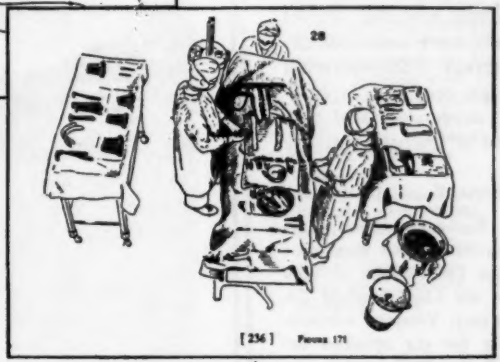
Three towel drapes and one perineal drape are shown above being used to drape for a thyroidectomy, providing a fixed, unobstructed field in an area notably hard to drape due to widely varying body contours.

An Invaluable Text For Nurses
On Operating Room Technic

ASEPTIC TREATMENT of WOUNDS

By Carl Walter, M.D.





Complete details of every known type of aseptic procedure are discussed and illustrated—scrubbing, preparation of nurse's tables, disinfection of the operative field, and aseptic handling of material. Methods for sterilizing dressings, dry goods, and instruments are thoroughly discussed.

• By Carl W. Walter, M.D., Assistant Professor of Surgery, Harvard Medical School; Associate in Surgery, Peter Bent Brigham Hospital.

Includes 255 line drawings by Miss Mildred Codding, noted medical illustrator.

372 pages
974 line drawings $9.00

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An Illustrated Card File for the O.R.

By Delpha M. Inman, R.N.

These practical teaching aids, developed in a Veterans Administration hospital, can be adapted to civilian hospitals, too.

WE have developed some simple teaching devices which have been helpful and have been enthusiastically used in the Veterans Administration Hospital in Des Moines. Although our staff is composed only of graduate registered nurses, we feel that these devices could also be valuable in teaching nursing students.

MISS INMAN (St. Mary's Hospital, Rochester, Minn.; B.S., University of Cincinnati, Ohio) is operating room supervisor at the Veterans Administration Hospital, Des Moines, Ia. This paper is published with permission of the Chief Medical Director, Department of Medicine and Surgery, Veterans Administration, who assumes no responsibility for the opinions expressed or conclusions drawn by the author.

From: Delpha M. Inman, R. N., "An Illustrated Card File for Operating Room Personnel", American Journal of Nursing, Vol. 50, No. 4, April, Pg. 222. By permission of the American Journal of Nursing.

Forceps, bone, Rongeur, Stille-Luer, double action 9"
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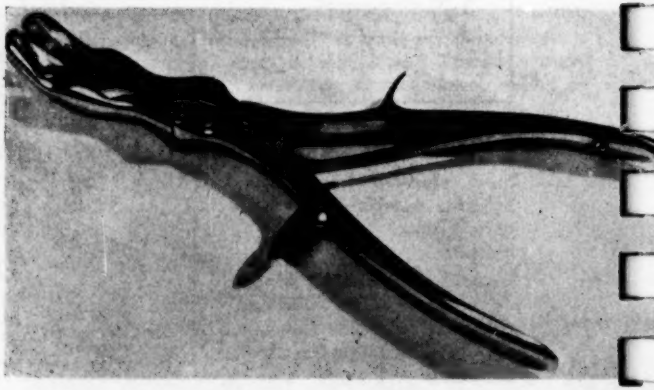

Figure 1. A single card is used to mount a picture of each surgical instrument and the standard nomenclature is carefully typed on the card.

The two types of visual aids we devised were an instrument illustration card and a surgical operation case card. We compiled a complete file illustrating all the instruments used in the operating room as well as a file of information about all of the surgical procedures usually performed. These two files, readily accessible to all nursing personnel, have been useful references in assembling equipment for surgical procedures and in learning the correct names of instruments.

We used the following materials to develop our card files:

Cards.—plain, white, 5" x 8"

Pictures.—instruments and equipment. (We used old catalogs and advertisements of instruments. The hospital photographer took pictures of a few instruments when pictures of them could not be obtained elsewhere.)

Cement.—the type used for making model airplanes is suggested since it does not make the cards ripple as do many glues and pastes

Scotch tape.—to hinge cards together where more than one card is needed

File cabinet or Kardex.—to facilitate arranging materials alphabetically

Intertrochanteric Fracture Fixation with Blade Plate

Instruments	Basic plus
2	Retractors, laminectomy, Adson-Beckman
1	Elevator, periosteal, Langenbeck, wide, slightly curved
1	Elevator, periosteal, Sedilot or Lane's, sharp
	Gouge, bone, U.S. Army pattern, assorted sizes
	Chisel, bone, U.S. Army pattern, assorted sizes
	Osteotome, U.S. Army pattern, assorted sizes
	Curette, bone, assorted
	Blade plates, Moore-Blount
	Driver-extractor for blade plates
	Rack, stainless steel screws
3	Guide pin, bone nail, calibrated, Smith-Petersen, 3/32" x 9"
1	Drill, Kirschner wire
1	Drill, bone, Universal, 2-speed, Zimmer
1	Mallet, orthopedic
	Metal ruler
1	Forceps, bone, Rongeur, Stille-Luer, double-action, curved, 9"
1	Forceps, bone-cutting, Stille-Liston, double-action, curved 10½"
1	Depth gauge
1	Screw driver, Stryker, for slotted head screw
1	Screw driver, plain
1	Bone set, operating, Luck
2	Bending irons

Figure 2. Surgical operation case card (front)

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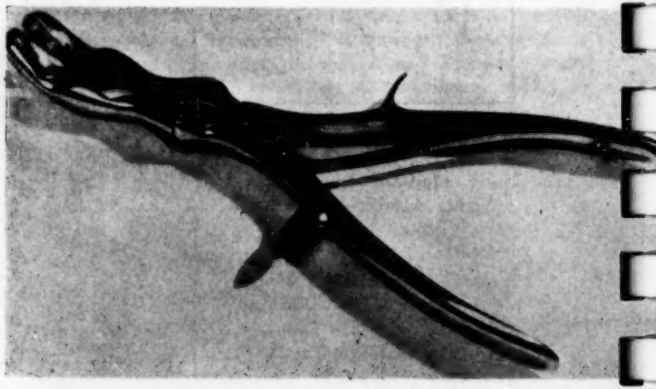

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1	Depth gauge
1	Screw driver, Stryker, for slotted head screw
1	Screw driver, plain
1	Bone set, operating, Luck
2	Bending irons

Figure 2. Surgical operation case card (front)

Sutures

Ties	Plain 00—roll
	Bovie unit
Fascia	Chromic O—½ length on 1826-4
Skin	Silk 00—1822-8

Position

Dorsal recumbent. Patient usually placed on Bell table with leg to be operated toward sterile table.

Preparation and Drapes

Routine orthopedic preparation and drape.

Supplies

Bell table from cast room
Sheet wadding (for padding)
Muslin bandage (to tie foot to rest)
Lower drapes (2)
Laparotomy sheet
Skin clip on applier (unsterile)

Dressing

Routine

Figure 3. Surgical operation case card (back)

Instrument Illustration Card File

A single card was used in mounting a picture of each instrument. The Veterans Administration depot catalog was consulted to obtain a master list of instruments, and the standard nomenclature was then carefully typed on the card. No nicknames were permitted, and the staff was encouraged to use accurate terminology.

The depot stock number was listed in the lower left hand corner of the card for each instrument. In the civilian hospital the surgical supply catalogs can be consulted for master lists and stock numbers.

Two types of depot stock items—expendable and nonexpendable—were identified by placing the letter X after the expendable item's stock number. This classification is comparable to the exchange and new-order system frequently used in civilian hospitals.

All cards are filed alphabetically and are numbered in the upper right hand corner to facilitate filing.

The Surgical Operation Case Card File

We assembled a list of instruments, sutures, and other supplies needed for each surgical operation performed (Fig. 2) see next page. Both sides of the case card were

used. Instruments were listed on the front; the reverse side carried lists of sutures and other supplies (Fig. 3). If more than one card was made for a procedure, they were hinged together with scotch tape along the top.

Conclusions and Suggestions

Accuracy is imperative in preparing the cards so that the information they contain is reliable. Every word should be correctly spelled, every item correctly named, and all data listed completed. The cards can then be used with confidence as teaching aids.

In addition to their usefulness in teaching, the cards can be very helpful to personnel who are responsible for the instrument inventory. Here, again, the use of standard nomencalture makes the process easier and more accurate. Instrument cupboard shelves should be labeled, using the same standard nomenclature for instruments as is used on the cards. This labeling facilitates filing, storing, and finding the instruments.

A holder constructed from used x-ray film can be made in which to slip case cards for both the scrub and suture nurses to use during an operation. The holder can be hung on the wall back of the sterile table and the nurses can refer to it at any time.

If an instrument is no longer used, or is discarded, the card can be removed. This procedure does not require much time if it is done regularly. and it insures an up-to-date file.

Although it may take much searching and time to obtain the pictures and other materials needed to prepare the teaching aids described, we can testify that in our case the staff's increased satisfaction in its work has been a sufficient reward.

Note to Supervisors

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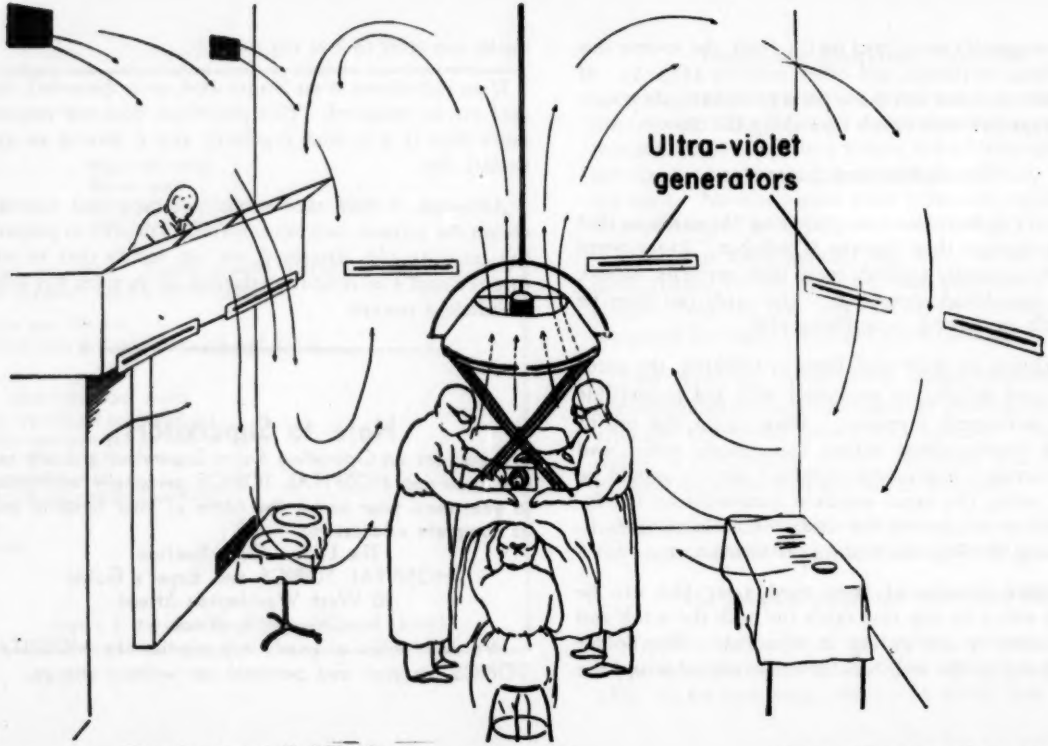
ULTRAVIOLET INSTALLATION IN OPERATING ROOM



Illustration, courtesy, MacMillan Co.

FIGURE 139

Kraissl, Cimiotti & Meleney [84]

POSTOPERATIVE infection resulting from air-borne contamination of the operative field is always a problem in the O.R. Sterilized air is as good a vehicle for the transmission of organisms as is polluted air.

However, the most dangerous and ubiquitous source of pathogenic organisms which fall into the operative field is the expired air from O.R. personnel. Many organisms are dispelled into the air by talking, laughing, sneezing or coughing during an operation. Masking filters out large drops of saliva, but the staff also should cooperate by cutting down talking and laughing. Masks should be changed during a long operation. They should be made of a permeable material and fit the face snugly so that air must pass through the gauze and not escape around it. For this reason plastic and cellophane masks are objectionable. It is good practice to launder new masks 10 to 12 times before use. Frequent laundering mats the fibers of the gauze and makes the masks more efficient in filtering bacteria. Dandruff and hair clippings falling from O.R. personnel can be prevented by wearing sterilized caps.

The Floor is Part of the O.R. Field

A second important source of contamination is dust and dirt scuffed up from the floor. Dust and dirt come from clothing and particularly from shoes which are worn outside the O.R. No one should be allowed in the O.R. who will not change his or her shoes. Slovenly habits of the staff — spilling blood and pus and dropping catgut and sponges, further contaminates the floor.

The best method of cleaning the O.R. floor is by using a vacuum which discharges outside of the hospital. This eliminates dirt instead of merely moving it and should be done once daily. If the hospital does not have a vacuum system, an ordinary vacuum cleaner can be used. The floor should be mopped between operations with a solution of a teaspoon of lye in a bucket of water — no mop pail. Too many hospitals are guilty of keeping a mop in a bucket which is seldom emptied. Then before an operation the floor is mopped down and contaminated with thousands of organisms which were not present before.

Air in the O.R. has been disinfected by dispersing germicides as a mist. However, available aerosols are not practical because they are either irritating to the eyes and lungs or they are toxic. This has been somewhat successful, but difficulties have been encountered. The drawing on page 41 shows a technic which has been found relatively effective.

Sufficient Exposure Is Needed

The action of ultraviolet is not instanteous and sufficient exposure must be provided to sterilize. To be satis-

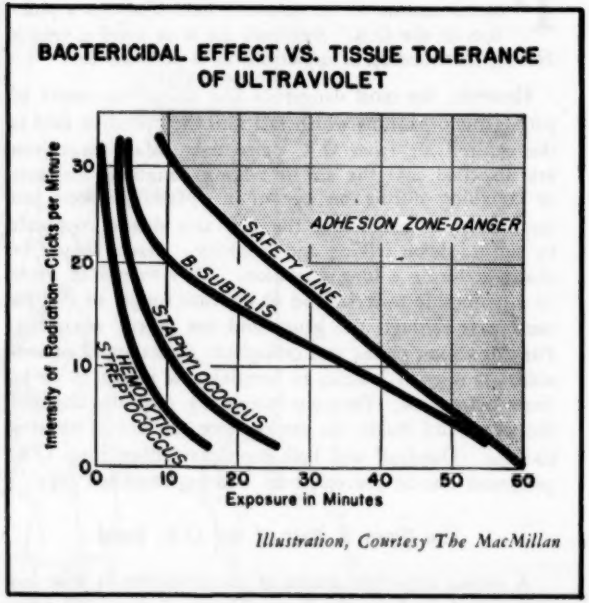
factorily destroyed by ultraviolet, organisms should fall through the air at the rate of three feet per minute. Organisms, especially those expelled forcibly from the masked mouth and nose, fall that distance in seconds.

If the intensity of the ultraviolet is increased sufficiently to kill all organisms, the danger of destroying tissue of the patient or the skin tissue of the staff member arises (see graph above). Adequate protection from radiation is necessary. Personnel should wear clear glass goggles, a wide brimmed helmet fitted with a snood-like skirt to protect the head and back of the neck is necessary. When so covered the surgeon and nurse are already sterile and have no need for the ultraviolet.

A technic in which ultraviolet can be used very successfully in the O.R. is to put an installation in the air conditioning system. Here it can do a thorough job of disinfecting the air before it enters the O.R. To be of good advantage, however, this system must be properly installed.

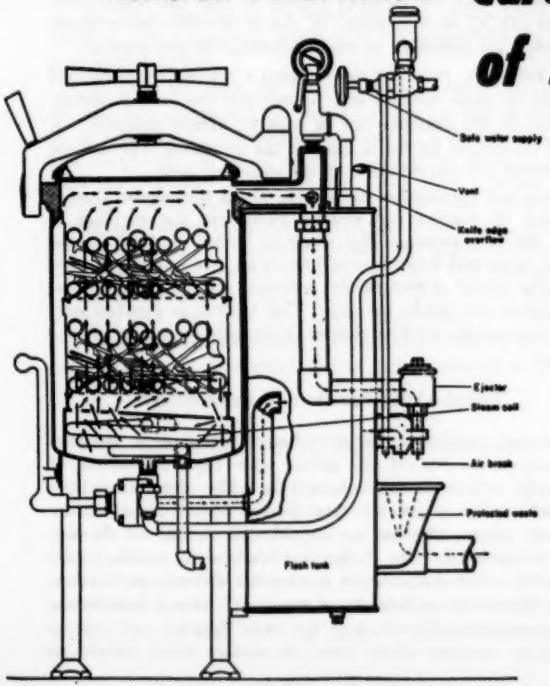
It is advisable that the use of ultraviolet be restricted to surgeons who are aware of the biophysics involved and who understand the limitations and hazards.

Since more organisms are introduced on fingers, instruments and dressings, than ever fall into the wound from the air, the first step in controlling postoperative infection is to enforce aseptic technic in the O.R. by the staff.



Illustration, Courtesy The MacMillan

INSTRUMENT WASHER STERILIZER



[145] FIGURE 109
(Illustration courtesy, Dr. Walter and The Macmillan Co.)

Care and Sterilization Technics of Surgical Instruments

THE problem in the sterilization of instruments is to achieve the rapid destruction of spores, many of which are resistant to both physical and chemical agents, particularly when protected by a film of oil or a coating of protein. There are several acceptable technics which are discussed here in order of preference.

An Instrument Washer Sterilizer is the most convenient means for absolute sterilization which is so rapid and satisfactory that it can be used advantageously for the preoperative and emergency sterilization of instruments.

Saturated steam either at 132° C. or 121° C., is a desirable agent. The advantage of the higher temperature is in the time saved. Instruments can be arranged on trays or wrapped muslin and subjected to saturated steam for 15 minutes at a temperature of 121° C. Corrosion from wetting can be avoided by preheating the load for 15 minutes before turning the steam into the chamber, thus instruments are heated by radiant energy and condensation is minimized.

Dry Heat is a satisfactory technic, but one which consumes much time. The instruments should be put into the chamber

of the dressing sterilizer and the door closed. Steam is turned into the jacket, not the chamber, and instruments are exposed for a minimum of four hours or overnight at 250° F (121° C.)

Nonpressure Sterilizers, using boiling water as a bactericide are frequently used. Certain precautions should be taken to increase their efficiency. Everything must be submerged and wet by the water. Oil and grease should be kept out of the sterilizer and alkali should be added to make the boiling water a more efficient bactericide. The safe minimum time for sterilizing is 30 minutes. This can be reduced to 15 minutes if 20% sodium carbonate or 0.1% sodium hydroxide is added. Boiling water is an inadequate germicide and should not be used where steam is available.

Emergency Sterilization of Instruments

The need for emergency sterilization arises daily. The exasperating delay which follows discovery of an omitted instrument, the accidental contamination of a special instrument, or a request for instruments required by an unexpected change in operative procedure is familiar in most operating rooms.

Instruments can be sterilized quickly and efficiently for such emergencies in a specially constructed pressure sterilizer which will complete the sterilizing cycle in less than four minutes. Before placing instruments in such a sterilizer, dirt and grease must be removed by cleaning with a detergent and slushing in a fat solvent like "Renuzit". The instruments are opened and placed on a perforated metal tray in the sterilizer. Steam is admitted into the chamber rapidly so that the temperature reaches 132° C. in 40 seconds. Spores of the most heat-resistant organisms are destroyed at this temperature in two minutes.

An automatic, recycling timer meters a consecutive sterilizing interval of three minutes and signals that the load is sterile. Pressure in the chamber can be relieved almost instantly. A sterile detachable handle is fitted to the sterilizing tray and the instruments are carried safely to the operating field.

Emergency sterilization can also be in the Instrument Washer Sterilizer by putting just enough water into the sterilizer to cover the instruments. The water is heated to 132° C. and the air is purged from the sterilizer, after two minutes at 1400 mm. Hg gauge pressure, the pressure can be relieved and instruments are ready for use. This technic is justified only if all instruments are first cleaned thoroughly to remove oil and grease.

Terminal Sterilization of Instruments

Exposing instruments to superheated water in a sterilizer designed to remove oil and grease scum from the surface of the water is a rapid and safe technic. The dirty instruments are collected in a stainless steel bucket directly from the instrument table. The catches are released so that all the surfaces are exposed. The bucket is placed in the sterilizer over the baffle which forces water to circulate through perforations in the bottom of the bucket. A steam coil located beneath the baffle, supplies adequate heat for rapid heating and sets up convection currents which carry the surface water toward an

overflow at the rear of the sterilizer. The continual rise in water level due to the expansion of heating water, carries the oil and scum formed by the blood and pus over a knife edge overflow into a reservoir, where it is discharged into the drain by a special ejector.

A suitable detergent and water softener is needed to remove the soil and to prevent the precipitation of a film of alkaline soaps and salts on the instruments and thus inhibit corrosion. The temperature is raised to 132° C. in seven minutes; a trip valve automatically shuts off the steam and a signal light indicates sterilization is completed. After two minutes, the superheated water is rapidly drained into a flash tank, exposing the instruments to saturated steam for approximately one minute while the pressure is being relieved. The residual heat in the instruments is sufficient to flash most of the adherent moisture and the clean, dry, sterile instruments are ready for use. Lacking this equipment, the instruments should be placed in a container of detergent solution and autoclaved at 121° C. for 45 minutes.

Sterilizing Cutting Edge Instruments

There are two types of cutting edges in surgery—the edge which cleaves and the edge which shears. The former is difficult to sterilize without spoiling the miscroscopic saw teeth which make it sharp. These edges corrode readily with a marked decrease in sharpness due to the concentration of electrolytic action on the saw teeth of the cutting edge.

The shearing edge does not present such an acute problem

Sterilizing Is A Problem Here

Sterilizing instruments is a real problem on the battlefield. Above, Sgt. E. K. Cline sterilizes instruments using boiling water. The sterilizer was part of the equipment in the battle aid station exhibit at the A.H.A. convention.

because a hard, smooth bevel-edge is essential rather than the thin, keen edge of a scalpel. The edges of blades intended for rough work are almost right angles; those designed for cutting delicate tissues have sharper bevels.

The ideal method for the sterilization of these instruments is to expose them to dry heat in a special constructed sterilizer for one hour at 160° C. on an electrically heated aluminum plate. If properly controlled a hot air oven is also satisfactory.

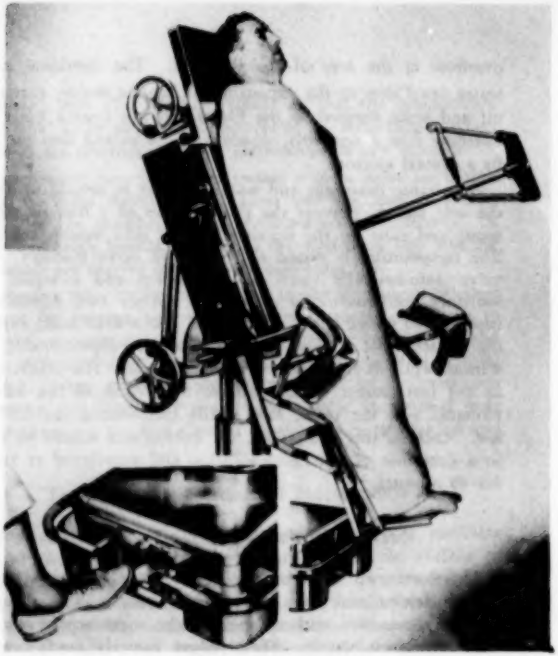
These instruments can also be satisfactorily sterilized by leaving them in the chamber of a dressing sterilizer for a minimum of four hours or overnight with steam in the jacket only. The oil sterilizer is an undesirable, messy, hazardous method of sterilizing these instruments.

Corrosion of cutting edeges can be prevented in the steam sterilizer by submerging them in diethylene glycol containing 10% to 20% of water. These instruments should be arranged in shallow trays and exposed to saturated steam at 121° C. for 30 minutes.

Chemical disinfection is satisfactory, provided the instruments are clean and dry when immersed and a sufficient period of time is permitted for germicidal action.

Cutting-edge instruments can be sanitized with but moderate dulling, by boiling for fifteen minutes in a 2% solution of sodium carbonate.

Abstracted from: "Aseptic Treatment of Wounds" by Dr. Carl W. Walter: Published by The Macmillan Co.



X-Ray Table

The Sisk urological x-ray table is equipped with an electro-hydraulic lift, allowing smooth, speedy, effortless raising or lowering between 32 and 47 inches off the floor. A foot lever activates an electric motor which controls the height of the table hydraulically.

NEW PRODUCTS FOR O.R.

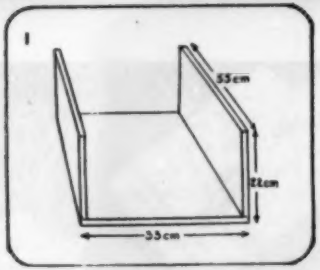
Surgical Glove Tester

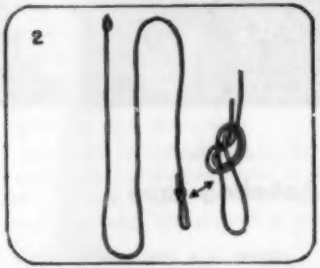
This unit which has a transparent plastic knob, affixed atop the cast metal case is designed to inflate the fingers or entire glove and may be rotated for complete inspection. Inflation is by harmless, non-inflammable moisture and oil free nitrogen gas. An electric light in the plastic knob will illuminate the inside of the glove and make the smallest hole easily detectable.

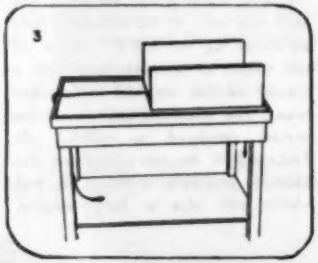
Labeling Tape

Labelon is a smudge-proof labeling tape, water proof, oil proof and acid resistant. It will withstand temperatures up to 150°F. Made of two sheets of acetate tape with a special carbon material sealed between, the identification cannot be erased, smudged, or rubbed off. Packaged in its own dispenser, Labelon is available in ⅛ or ¾ inch widths with blue or black edging.

Packaging the



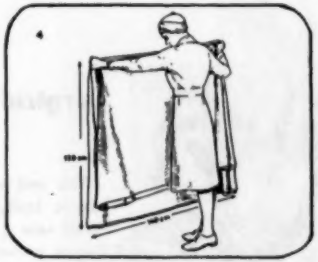




Dry goods must be packaged so that they can be handled by unsterile individuals and stored until needed. The wrapper must permit ready penetration by steam, yet must be mechanically tight so that careless fingers or vermin are excluded. The package should be large enough to contain supplies for a surgical procedure stacked in such fashion that when the package is opened, the contents are present in the order in which they are used.

The laparotomy kit is wrapped in a single package, 55 x 33 x 22 cm. in such a manner that saturated steam contacts the entire contents within fourteen minutes after the temperature in the sterilizer rises to 121°.

The wooden trough, figure 1, limits the size and shape of the package to standard dimensions which permit uniform penetration. It also yields a package which bests fits the sterilizing carriage.



The wrapper is made from two bed sheets folded crosswise and interleaved pamphlet-like to form four thicknesses. The package is tied with three meters of no. 1 awning line applied as a library tie. The cord is prepared by throwing an overhand knot at one end to prevent fraying. A loop knot with a loop 7 cm. long is bent on the other end.

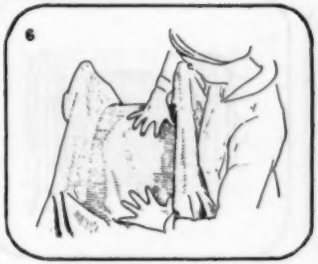
The wooden trough is then placed on the nurse's table in the position that the stack of sterile goods is wanted for the operation. The cord is placed in the bottom of the trough. Next the folded sheets are

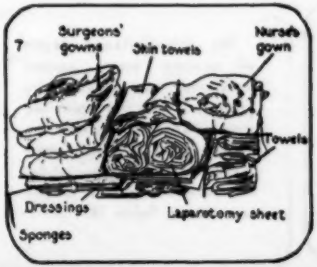
Laparotomy Kit

draped in the trough with the folded edge away from the operator and the shortest leaves of the sheets uppermost, figure 5. The sheets are arranged so that the whole table is covered for they will serve as the sterile drapes when the package is opened.

The supplies needed during the operation (sponges, abdominal packs, additional towels, final dressings) are arranged on the bottom layer, figure 7, 8 Those required earlier are put on top.

The laparotomy sheet, fan-folded and rolled to afford easy draping is put in the

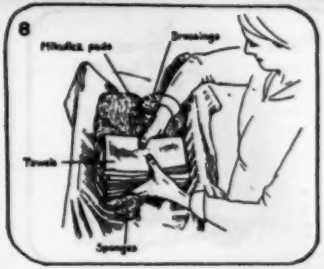


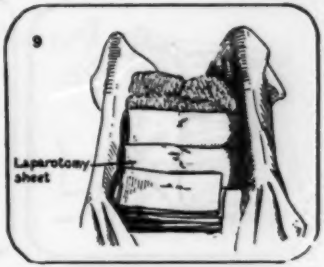


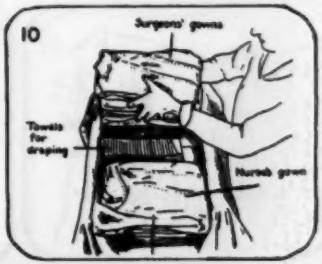
center of the second layer, figure 9. This sheet is the key to successful sterilization because when properly folded and rolled and suitably located in the bundle, it provides channels for ready penetration of steam to the center of the bundle and divides the bundle into five smaller sections, figure 7.

Three folded gowns are piled to the right of the laparotomy sheet. The nurse's gown is placed on top of the towels to the left of the rolled sheet. Towels, folded for draping the skin are piled on top of the laparotomy sheet and the bundle is snugged together, figure 11

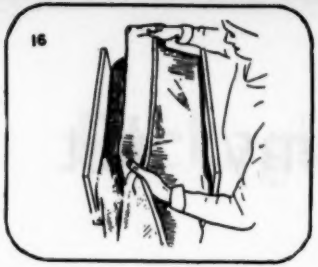
The two uppermost leaves of the wrapper are brought across the top of the bundle and a small cuff is turned back to provide a safe finger-hold for the unsterile nurse as she unwraps the kit. The

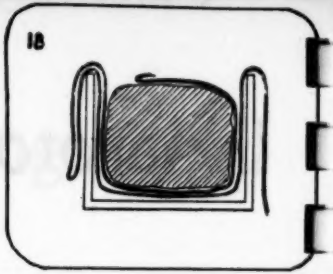


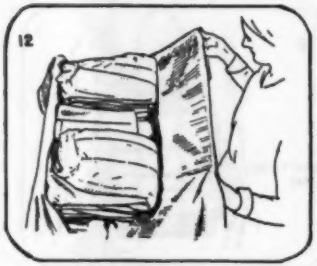


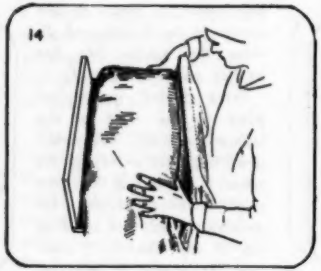


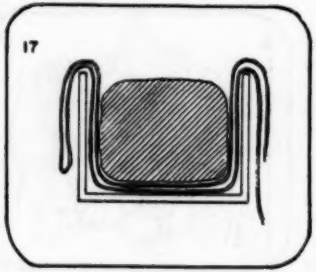
outer leaves of the wrapper are brought over to finish the package, figures 13-18.

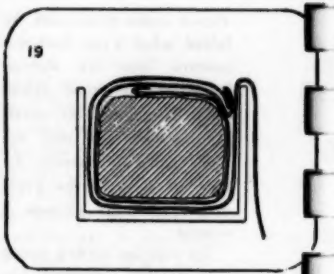


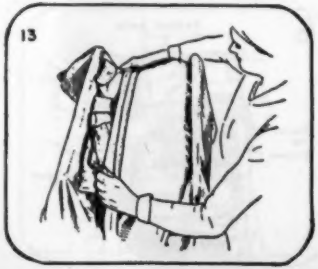


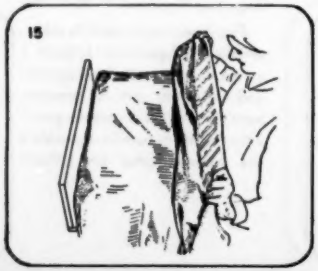




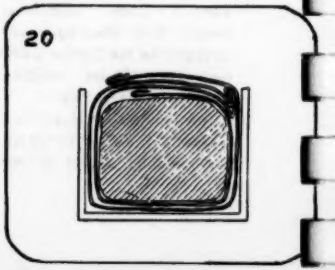






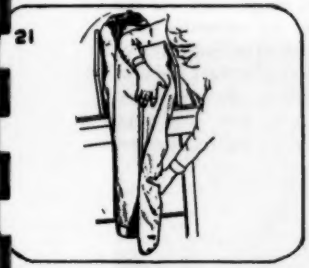


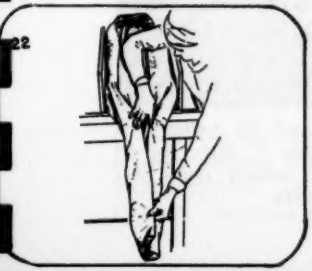
The interdigitating layers of wrapper insure against accidental contamination by careless hands or prowling vermin because anything inserted beneath the outer leaves is put into the cul-de-sac between the folds of the inner sheet, figure 18.

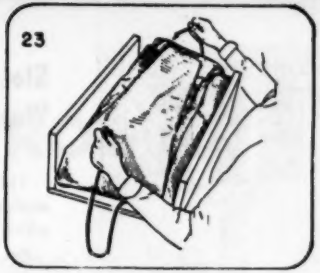


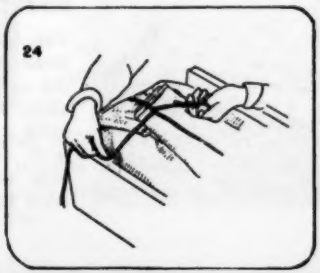
The bundle is completed by folding in the end flaps, figures 21-22 The two ends of the cord are picked up in either hand, figure 23 and crossed in the center of the package. The loop is then caught over the left thumb and the long end held in the right hand. As the package is lifted from the trough the long end is carried about the package, figures 24 and 25 and inserted through the loop. The cord is pulled tight and a single bow knot is tied figures 27-29 The kit is then labeled.

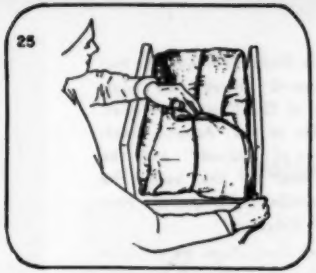
If the package is properly wrapped, it can be opened by an unsterile nurse without danger of contamination because the wrapper opens out from the sterile field and its contents are instantly available in the order in which they are required during operation.

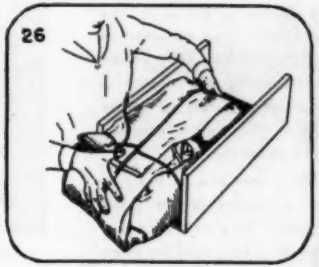


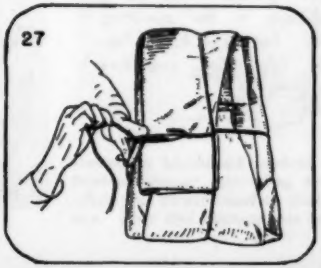


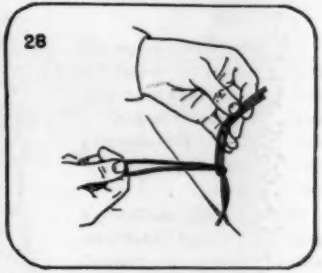


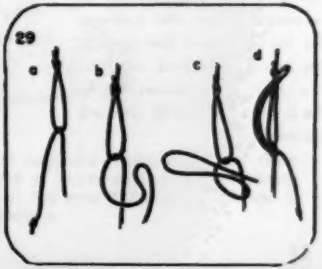












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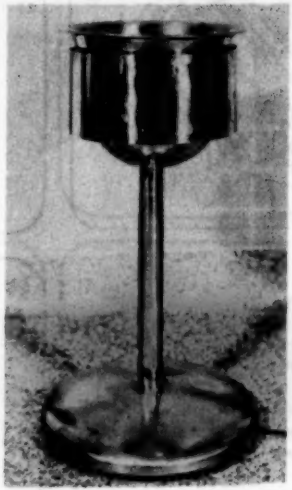
Ties rather than pins are desirable because the life of the cloth is prolonged and pinholes invite contamination. It also prevents tight wrapping which makes penetration difficult for steam.

Once properly sterilized, a package is stored indefinitely without danger of contamination. The only precaution needed is that the package be kept dry and that moving be avoided because pummeling a package causes air to be drawn into it with resultant contamination.

These illustrations and the text appeared through the courtesy of Dr. Carl W. Walter, author of the "Aseptic Treatment of Wounds" and the publisher of the book, The MacMillan Company, New York City.

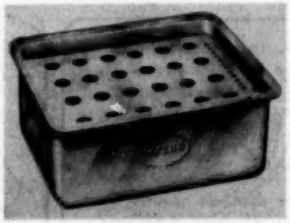
The illustrations are reduced to one-half the size which they appear in the book. The illustrations in themselves clearly show how to package a Laparotomy kit in such a fashion that saturated steam contacts the entire contents of the package.

This is only one of the features contained in the book, "Aseptic Treatment of Wounds" being used by many operating supervisors as a handbook in the operating room. See page 43 for further information regarding the book.



Sterile Solution Warmer

This versatile piece of equipment will increase o.r. efficiency in the operating room by always having a wet surgical sponge at the desired temperature. It can be used for extremity soaks as in industrial hand injuries and in the Delivery room to keep sterile solutions warm. It is clean, easy to operate. For further information see



Mizur Syringe Holder

This 2-piece holder will hold 24 assemble syringes for autoclaving and for sterile storage in clinics and in wards. The Unit holds 2 or 5 CC syringes. It is 6" wide, 5" high, and 8" long of compact shape that saves storage.

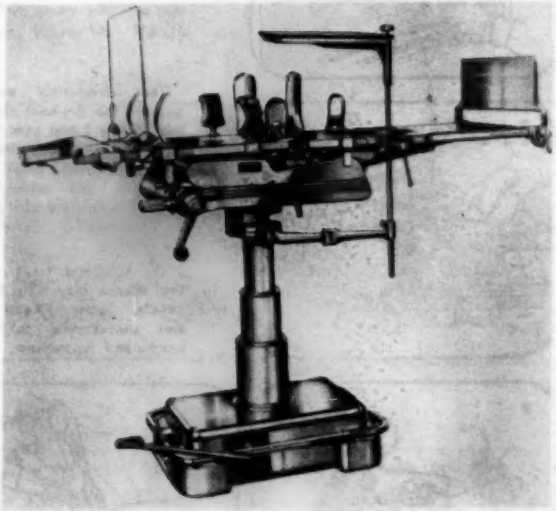
NEW PRODUCTS

Anesthetist's Table

Stainless · steel operating room equipment is a valuable preventative against explosions caused by electric sparks setting off gases used in anesthesia. Painted or enamel units often build up static charges as their surfaces are non-conductive. On the other hand, solid stainless steel surfaces, being unpainted, conduct static charges to the ground and makes it explosion proof.

This table was designed with this safety factor in mind. Polished stainless steel surfaces and Underwriters' Laboratories approved electrically conductive casters are used to make "explosion-proof".

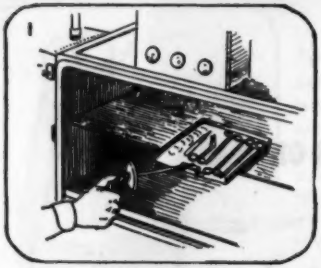
Special OR Table

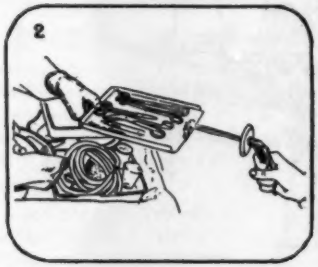


Complete head-end control of required postures on the Ohio Scanlan major operating table is accomplished automatically after the direct reading dial of the new Selectrol Positioner is set. Four dial settings are included.

Cutting Instruments Needle Holders Towels Suction Tubing

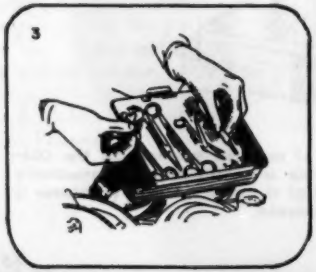
ROUTINE FOLLOWED BY SCRUBBED NURSE

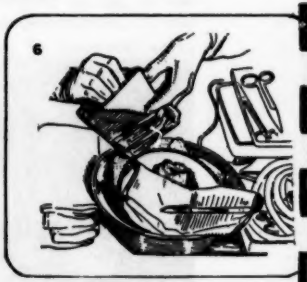


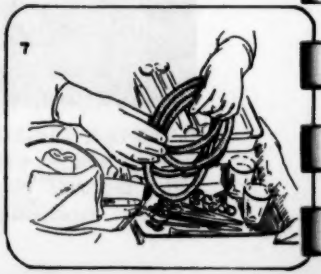


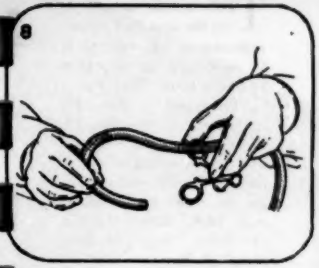
The circulating nurse, goes to the dry-heat sterilizer, figure 1 and gets the aluminum tray containing the sterile cutting edge instruments, and carries it to the sterile field with the sterile transfer forceps, figure 2.

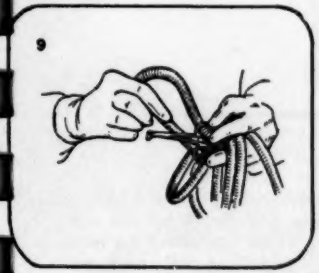
The scrubbed nurse fits the scapel blade to the handle, figures 3 and 4 and places the scapel, handle-end uppermost, on the towel in which the silk has been interleaved, figure 6. She fan-folds a towel, immerses it in the solution in the glove basin and wrings it out as dry as possible, figure 5. This towel is placed on top of the scalpel, figure 6.



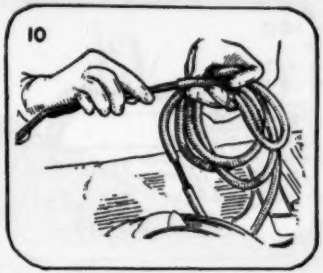






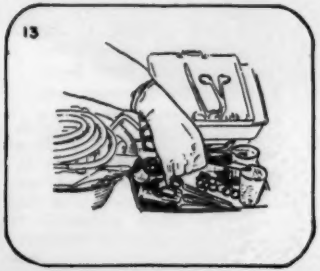


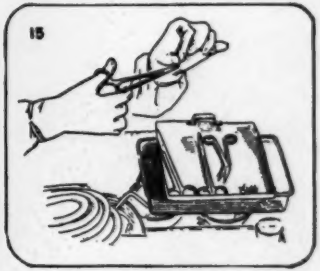
The rubber suction tubing is threaded through the rings of a towel clip, figures 7, 8, and 9 and the suction tip is inserted into the end of the rubber tubing, figure 10. The coiled tubing is then placed on top of the moistened towel in the basin, figure 11.



The straight abdominal scissors are placed in the space between the folded towel and the edge of the small basin so that they stand upright, figure 12.

The needle holders which are likely to be used early in the operation are loaded, figures 13, 14, and 15 and stood in the small basin along with the scissors, figure 16. The re-





17

The towel clips are opened and arranged in the front left-hand corner of the table so that they are ready for use.

The asepto syringe is assembled, and placed on the nurse's table. If assembly is difficult, the tip of the bulb is moistened with 1:1000 aqueous Zepriran. The aluminum pan which contained the nurse's kit now serves as the waste pan on her table.

maining scissors and needle holders, figure 17 are placed aside on the nurse's table, figure 18. Extra needles are poured into a medicine glass and the aluminum tray is discarded to the circulating nurse.

19

18

20

THIS technic for arranging the scrubbed nurse's instruments on her table is described in Dr. Carl Walter's book "The Aseptic Treatment of Wounds" and reprinted here through the courtesy of Dr. Walter and the MacMillian Company. The illustrations are by Mildred B. Codding, A.B., M.A., Surgical Artist of Peter Bent Brigham Hospital, Boston.

- Windows in the O.R. should be kept closed to prevent the entrance of dust and dirt from the outside. Pigeon droppings which are found on most institutional window sills are often pellets of concentrated tetanus bacilli.

- The floor should be cleaned with a vacuum once a day and mopped

- White flakes coming into the room may be from condensation on the coils of your air conditioning system which has dried and flaked off. This is caused by faulty installation which should be remedied immediately.

● A glimpse of the future when the O.R.S. may take the center of the stage on television was provided by St. Luke's Hospital, Chicago, during the Clinical Congress of the American College of Surgeons. Dr. MacEachern of the College first suggested the use of television as a means of teaching hospital administrative techniques and St. Luke's and the College collaborated on a program which was color televised during the meeting, under the sponsorship of Smith, Kline and French Laboratories. Shown here is photo taken during the preparation of the instrument set-up for an appendectomy.

● The program was arranged by Miss Madeleine McConnell, Director of the School of Nursing and Director of the School of Nursing and Director of Nursing Service. Televised were Miss Marie Ante, Instructor and Operating Room Supervisor; Miss Georgianna Kelly, Assistant Instructor and Assistant Operating Room Supervisor; and Miss Allison Myers, Assistant Instructor and Assistant Operating Room Supervisor.

Question Box

EACH month questions pertaining to O.R. problems and technics will be answered by Dr. Carl W. Walter, nationally known for his operating room technic courses and as the author of "Aseptic Treatment of Wounds" (MacMillan). Questions should be addressed care of the O.R. Editor, Hospital Topics.

Q. How can one insure sterile tubing?

A. Rubber tubing and rubber bulbs should be sterilized with a few drops of water inside to provide for steam formation.

Q. How should syringes be sterilized?

A. Syringes are best sterilized in a dry heat sterilizer at 320°F. for one hour. They may be also sterilized in the chamber of the steam sterilizer with steam in the jacket only at 250°F. for eight hours. If a steam sterilizer is used, the syringes are sterilized disassembled to insure proper sterilization and to prevent breakage for 30 minutes at 250°F.

Q. How often can nylon, silk and cotton be sterilized?

A. Nylon, silk and cotton suture material can be resterilized any number of times provided the strands are moistened every time prior to sterilization. Sterilize in saturated steam at 250°F. for 30 minutes.

Q. How can stainless steel be polished?

A. A buffing wheel will do a good job of polishing.

Q. How can needles be cleaned?

A. Surgical needles can be cleaned by soaking in a detergent, drying and then running through a small bag of #80 emery powder. Cannulated needles should be reamed out with a tightly fitting stylette; flushed through with a hot detergent solution and then rinsed with dis-

tilled water. Care should be taken to clean out the hubs where dirt and blood will accumulate. Needles should be sterilized with some water left in the cannulae.

Q. Should new gloves be washed?

A. New gloves should be washed to remove the talcum powder which is on them. The irritants in rubber gloves can be removed by soaking 15 minutes in a 5% solution of sodium carbonate, rinsing and then sterilizing.

Q. Where should aseptic technic be taught?

A. Fundamentals of aseptic technic should be taught to nurses in the classroom and to doctors while they are in medical school. With some background and practice, the surgeon and operating room supervisor are spared the hardship of constantly working with untrained, floundering personnel.

Q. Should silk or cotton be wrapped on a wooden block to be sterilized?

A. Silk or cotton should not be sterilized on wooden blocks because the wood superheats and causes charring of the sutures. Also, the suture material shrinks on the board when it is heated and is markedly weakened.

Q. How can the humidity in the O.R. be increased?

A. Spraying water into the ventilating system is the easiest method.

Q. Can window air conditioners be used in the O.R.?

A. Some window conditioners are adequate. The machine should have a good barrier between the compressor and the evaporator outlet so that all electrical connections are in effect outside the room. They should be mounted five feet above the floor. The filters should be changed every two weeks.

The O.R. LIBRARY

Pathology in General Surgery, by Paul W. Schafer, M.D., 600 pages, 495 plates, Chicago: The University of Chicago Press.

In addition to a well-organized and clearly written text, this work contains the most outstanding collection of color plates ever presented in a single text on either surgery or pathology.

Photographs of gross pathology specimens and microphotographs in color lend authenticity to the text. X-rays and Occasional living pathology photographs aid the surgeon in diagnosis.

Schafer, well trained in this field at the University of Chicago, is now connected with the University of Kansas. His experience at both schools was used in compilation of the book.

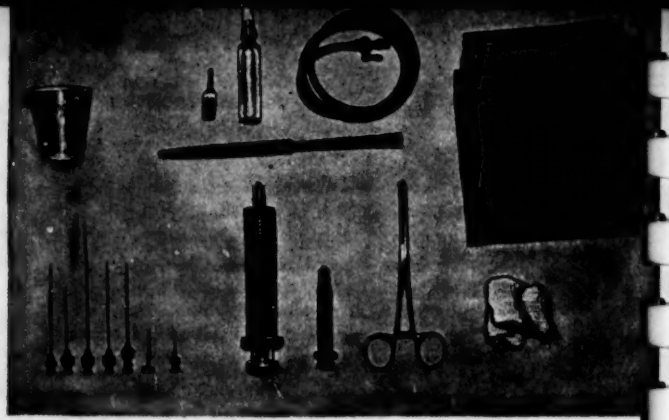


FIG. 58. Anesthetic tray for continuous spinal pediatric anesthesia, using Lemmon's malleable spinal needles cut in three lengths for differ[illegible] ages.

Engravings Courtesy MacMillan Co.

The numerous chapters are grouped anatomically. Each chapter is concise and documented.

"Pathology in General Surgery" is definitely recommended for the O. R. Library. The surgeon, whether general or specialized, is bound to gain by frequent reference or casual perusal of this informative book.

The O. R. LIBRARY

Pediatric Anesthesia
by M. Digby Leigh, M.D. and M. Kathleen Belton, M.D.
Macmillan N. Y. 1949, 240 pages, illus. $5.50

The authors, well qualified to produce this important work, describe the technics used at the Vancouver General Hospital.

The patient is carried through the stages from the taking of the history to the postoperative care. Preliminary to the discussion of anesthesia and its effects, is a highly informative chapter on the physiology of respiration. This background is necessary for a proper understanding of the peculiarities of pediatric anesthesia.

The difference between childhood and adult anesthesia is not merely quantitative. In this book a child is not discussed as a small adult, but as a different physiologic entity. Choice of technic, anesthetic agent or medication may differ considerably, thus indicating the need for a book such as this.

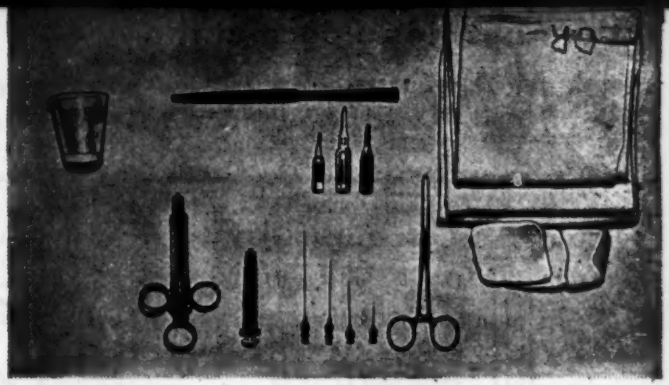


FIG. 57. Anesthetic tray for pontocaine-glucose spinal anesthesia.

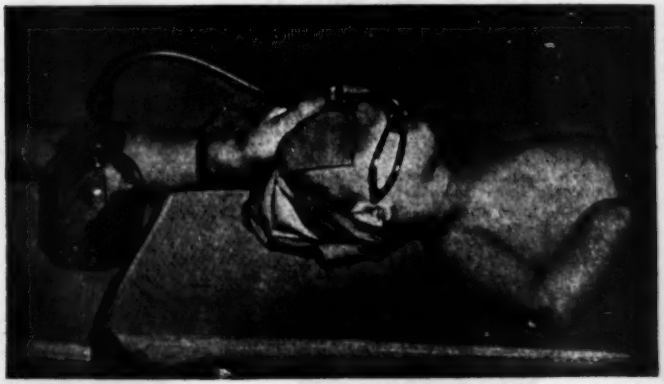


FIG. 60. Simple method of endotracheal no rebreathing technic using valvular apparatus and ether bottle reservoir.

THE O. R. LIBRARY

Aseptic Treatment of Wounds
by Carl W. Walter
372 pages, The Macmillan Company, New York
$9.00.

Not words, but pictures, tell the technic of aseptic care in this important book. To be sure, the text contains descriptive material, but each step in the care of a case is illustrated graphically, so that the book serves as a quick reference manual as

well as a text for teaching or study.

Even the administration of parenteral fluid is illustrated, inasmuch as it is a step in the aseptic care of the patient with a wound, whether it be surgical or traumatic.

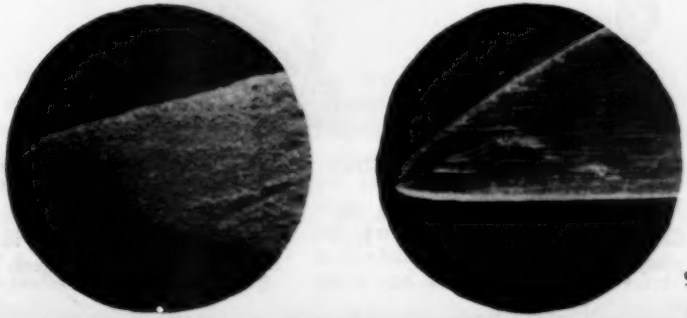
"Aseptic Treatment of Wounds" is highly recommended for the student of surgical nursing technic and as a reference work in the surgical library. *(Photo courtesy Macmillan Company)*

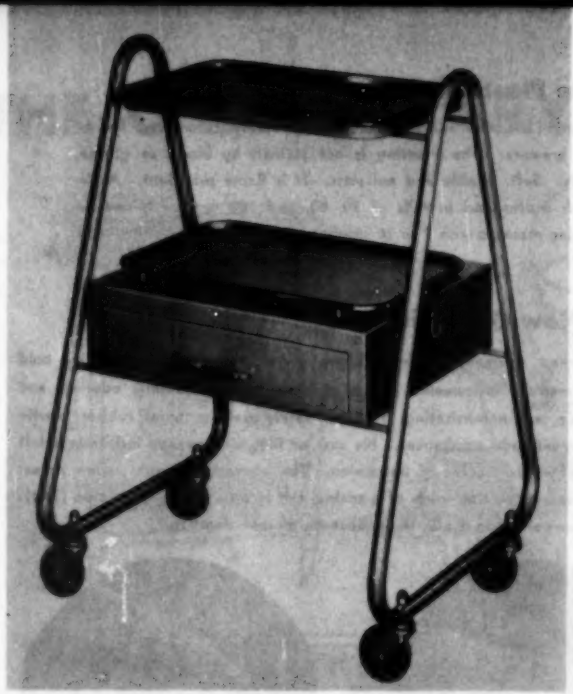
Autoclave Type Plastic Sheeting

This plastic sheeting (See Photo Left) can be repeatedly autoclaved for 60 minutes at 18 pounds pressure. The sheeting is not stained by blood or grease, is not affected by acids. Soft, pliable and noiseless. It is flame retardent. Available in 36 and 48 inch widths and in rolls of 30, 50, and 100 yards. It can be sewn on a standard sewing machine with 7 to 10 stitches per inch.

R.I.G. — New Germicide

R.I.G. is a new, permanent rust inhibiting germicide concentrate for the cold disinfection of medical instruments and appliances. It is colorless, odorless and stable. Non-toxic, and non-irritating, it can be safely used on metal, rubber, plastic and glass instruments and appliances. No rust or film will form on instruments left in R.I.G. even after six months of immersion. The photomicrographs below reveal the pitting and loss of cutting edge of a scalpel left in an ordinary germicide (left). At the right a scalpel left in R.I.G. shows absence of such damage.



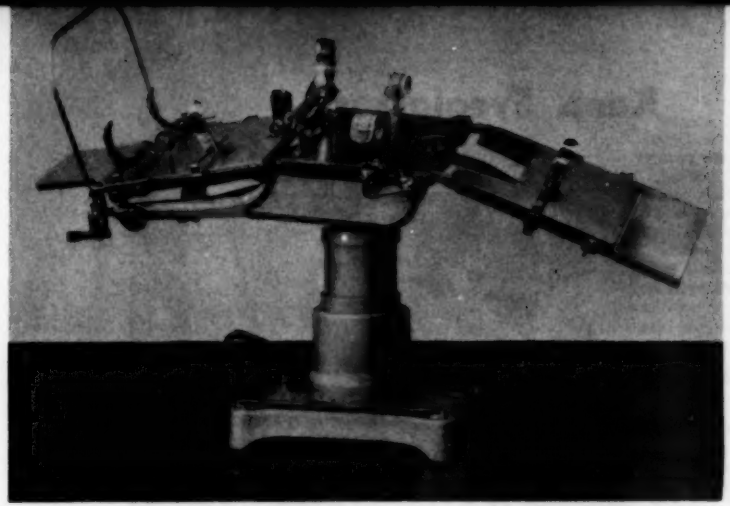


Anesthesia Table

It's perfect for keeping all necessary supplies close at hand. Stainless steel trays are removable and easy to use. A handy upply drawer is available if desired and is also removable for cleaning. The whole table is remarkably easy to clean without tight corners and deep crevices. There are hooks for hanging masks, etc. Its distinctive style is a refreshing departure from time-worn forms. Construction is strong, yet lightweight, and the table is smoothly maneuverable. Finish is either stainless steel or Surgalum — a smooth light gray finish that's strong and practical. Frame is 1" 18-gauge steel tubing with 3" ball bearing swivel casters. Table is 34" high x 20-5/8" x 24".

HOW TO DYE OPERATING ROOM LINEN —*F. N. McCutcheon, Hartford (Conn.) Hospital, in "The Laundryman".*

While sparkling white sheets and other linens are very desirable for use on patients' beds, the doctors have other ideas for linens used in the operating rooms. The surgeon has discovered by using colored linens, preferably gray or green, the glare from the strong lights used over the tables cuts down eye strain to almost a minimum.



Major Operating Table

This model incorporates a pump that elevates the table top from a low minimum height of 31 inches to an extreme maximum height of 46 inches. A large cut-out in leg section provides clearance for transurethral tray which may be attached beneath the perineal cut-out of the seat section. Back, seat and leg sections are adjustable through head-end control wheels. The table is equipped with built-in tiltometer and is constructed to handle many special accessories. The base offers rotation feature, immobilization and elevation through three separately operated foot pedals.

Thus our laundry was faced with the problem of finding a good washable, permanent dye to do this job properly. By considerable research, we at the Hartford hospital have found just that. The following formula is being used here with fine results.

The 42x84 metal washer is used. Two hundred pounds of material was found to be the proper weight to be dyed at one time in this size wheel. Of course other sizes of wheels can be used as long as the contents of the wheel are not over three-fourths the capacity of the wheel.

It is preferred to give even new materials a light suds before dyeing. If soiled linens are to be dyed, a regular washing formula should be used. Operation for gray tinted linens is as follows:

Fourteen inches of hot water are put into machine. Two ounces of direct gray and two teaspoons of carbide fast black are thoroughly mixed in one-half pail of hot water and injected into washer. The steam valve

Anesthesia Table

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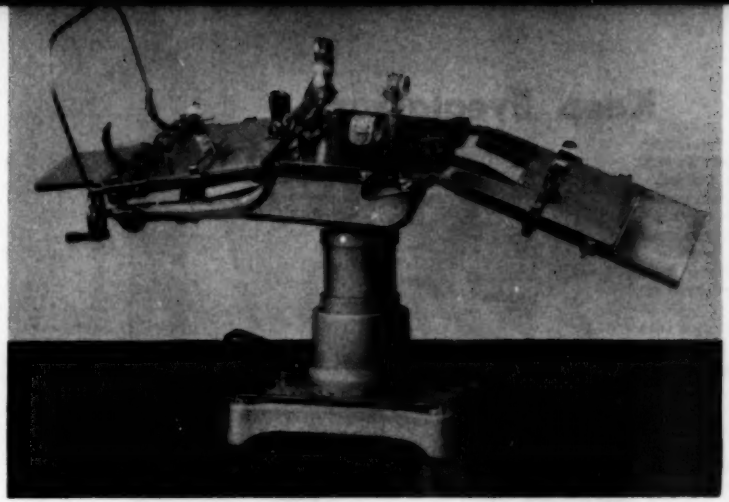

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The 42x84 metal washer is used. Two hundred pounds of material was found to be the proper weight to be dyed at one time in this size wheel. Of course other sizes of wheels can be used as long as the contents of the wheel are not over three-fourths the capacity of the wheel.

It is preferred to give even new materials a light suds before dyeing. If soiled linens are to be dyed, a regular washing formula should be used. Operation for gray tinted linens is as follows:

Fourteen inches of hot water are put into machine. Two ounces of direct gray and two teaspoons of carbide fast black are thoroughly mixed in one-half pail of hot water and injected into washer. The steam valve

is then turned on to raise the temperature to 212 degrees or boiling. Ten pounds of Glauber Salt are dissolved in a pail of hot water and are added to the washer. This is run for 30 minutes and is followed by two cold rinses to flush away all loose dye. This also cools off the load for more comfortable handling. In return for this extra work we are compensated in some measure by easier identification of operating room linens.

Pyrem Removes Pyrogen

In addition to effectively removing tissue, blood, plasma, mucus and many chemical stains from soiled articles, pyrem removes pyrogen. A ready-to-use solution is prepared by adding one ounce of pyrem to a gallon of water. The articles are immersed then after a follow up rinse they are ready for sterilizing. It will not deteriorate upon standing or during use. It is not harmful to the skin and will not stain clothing. Articles of rubber, enamel, glass and steel can be cleaned in safety.

Keep Eyeglasses From Fogging

Eyeglasses become fogged with condensed moisture from the breath during operations where a surgical mask is worn. To eliminate this, clean the glasses in the method of choice, then rub soap or soap liquid in small amounts on the lenses. Polish without water with paper tissue. The thin film of soap remaining on the lenses will prevent fogging. **(Walter C. Baldwin, D.D.S., in Dental Digest, Jan., 1950)**

BY-LAWS
of the
DALLAS ASSOCIATION OF OPERATING ROOM NURSES

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ARTICLE I—Name and Objects

This organization shall be known as "The Dallas Association of Operating Room Nurses," and its objects shall be to promote good fellowship among its members, and to promote the advancement of the interest in the development of surgical technic and progress and the provision of friendly assistance to each other.

ARTICLE II—Membership

Section 1—Types of Membership: Membership in the Association shall be on a personal basis, Active or Associate, on application and election as provided herein.

Section 2—Active: Active members shall consist of operating room supervisors and assistant operating room supervisors who are registered nurses in the state of Texas and have been actively engaged in operating room supervision for three years or who had postgraduate training in this specialty.

Section 3—Associate: Associate members shall consist of any registered nurse in the state of Texas who is actively engaged in an operating room position.

Section 4—Voting Body: The voting body of this Association shall consist of the members in good standing.

ARTICLE III—Dues

Section 1—Scale of Dues: The annual dues for Active and Associate Membership shall be $, Payable by January first of each year for the following year.

Section 2—Default in Payments of Dues: Members failing to pay their dues by the last day of December shall forfeit the rights of membership and their names shall be taken from the membership list.

Section 3—Re-instatement: Members who have been dropped from membership for non-payment of dues may be re-instated on payment of $, plus the amount of the dues in default. A copy of the Association's By-Laws shall be presented to each new member when she is accepted to membership.

ARTICLE IV—Officers and Board of Directors

Section 1—Election: The Officers of this Association shall be the President, the Vice-President, the Secretary, and the Treasurer, who shall be elected by ballot by the voting body at the annual meeting and shall continue in office for a term of one year or until successors are elected. The Board of Directors shall consist of these four officers together with three Directors. Three Directors shall be elected at the annual meeting, one to serve for one year, one to serve for two years, and one to serve for three years. At each annual meeting thereafter, one Director shall be elected to serve for three years. In the case of a vacancy in the office of the President, the Vice-President shall assume the duties of that office until expiration of the term. In the case of a vacancy in any other office, the President together with the Board of Directors may appoint a member to hold that office until expiration of the term.

Section 2—Duties: The President shall preside at all meetings of the Association and of the Board of Directors. She shall appoint all standing committees and shall act as an ex officio member of all committees. She shall have power to call meetings of the Board of Directors as she deems necessary.

The Vice-President shall discharge the duties of the President in her absence or in case of vacancy in that office.

The Secretary shall keep minutes of the meetings of the Board of Directors and of the Association's annual meeting; shall be custodian of all records and papers belonging to the Association; shall receive and present all applications for membership to board of Directors; shall conduct the general correspondence of the Association; shall notify all officers of their election and committees of their appointments; shall send notices of time and place of meetings; and shall deliver all books and papers pertaining to the Association to her successor within one month following the election.

The Treasurer shall receive and have charge of all funds of the Association: shall deposit such funds in a bank designated by the Board of Directors; and shall pay all bills approved by the Board of Directors. Checks must be signed by the Treasurer and countersigned by the President. She shall keep an itemized account of all money received and dispersed and shall present a complete statement of all transactions at each meeting of the Board of Directors; and she shall present a written report to the Membership at the annual meeting.

The Board of Directors shall keep constant supervision over the Association and shall devise and mature measures for its growth and prosperity.

ARTICLE V—Meetings

Section 1—Annual Meeting: The annual meeting shall be held the first Wednesday in January of each year, at which time the fiscal year begins.

Section 2—Monthly Meetings: The monthly meetings shall be held the first Wednesday of each month.

Section 3—Notice of Meetings: Notices of the monthly meetings shall be sent to all members of the Association at least four days prior to the time fixed for the meeting. Notice of the annual meeting shall be sent to all members at least one month before that meeting.

Section 4—Special Meetings: Special meetings of the Association may be called by the President or by four members of the Board of Directors.

Section 5—Order of Business: The order of business at any

Miss June Smith,
Baylor University Hospital
Acting President
O. R.s Group of Dallas

Miss Mary Francis,
Baylor University Hospital
Dallas, Treasurer, O. R.s
Group of Dallas

meeting shall be as follows: Call to order, reading of minutes, communications from the President, report of the Treasurer, miscellaneous business, report of committees, new business, and adjournment.

Section 6—Parliamentary Authority: Robert's Rules of Order, Revised, shall be the parliamentary authority for this Association.

ARTICLE VI—Quorum

Section 1—Board of Directors: The majority of the Board of Directors shall constitute a quorum of any meeting of the Board of Directors.

Section 2—Membership Meetings. Two officers and a majority of the active members shall constitute a quorum for any annual or regular monthly meeting of the Association.

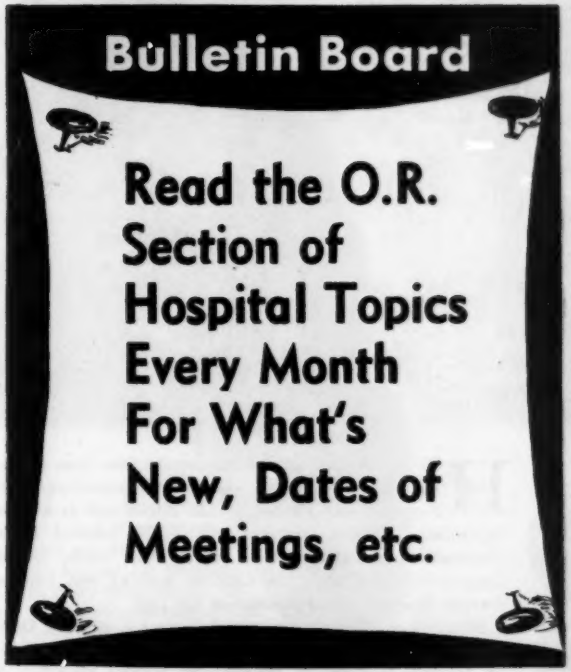
ARTICLE VII—Standing Committees

Section 1—Committees: There shall be four standing committees, which shall consist of three members each: Program, Finance, and Nominating, and Social.

Section 2—Duties: The Program Committee shall arrange and have charge of all professional and social programs of the Association. The Finance Committee shall consist of the Treasurer as chairman and two members appointed by the President. The Nominating Committee shall prepare the ticket for the annual election of Officers and Directors, presenting the names of two candidates for each office to be filled. The nominees shall have consented to serve prior to the election.

ARTICLE VIII—Amendment

The Association's By-Laws may be amended, adopted, or repealed at any annual meeting by a quorum. Proposed changes in the By-Laws shall be mailed to each Member at least two weeks before the date of the annual meeting.



HOLDING their initial meeting in June (see September Hospital Topics) to consider organization, the San Francisco and Peninsula O.R. nurses met as a group in September. Elected president was V. M. Ireland, Childrens Hospital; secretary-treasurer is Myrtle Mae Smith, San Mateo Community Hospital. The October meeting was held at St. Josephs Hospital, San Francisco on the 13th.

Members in the group pictured above are standing from left to right: R. Hare, Ft. Miley Veterans Hospital; H. Cook, St. Joseph's Hospital, E. Driscoll, St. Josephs Hospital; M. E. Wilkins, Ft. Miley Veterans Hospital; Mary Gill, St. Mary's Hospital; M. Harms, University of California, Hospital; all in San Francisco; M. Teresi and J. Bracchi, O'Connors Hospital, San Jose.

Sitting from left to right are: O. Whidden, Hahnaman Hospital, M. Mori, Stanford University Hospital; and A. Gentile, Ft. Miley Veterans Hospital, all in San Francisco; M. Smith, San Mateo Community Hospital, San Mateo; Helen Ann Kelley, Laguna Honda Hospital, San Francisco; E. Kovich, Mills Memorial Hospital, San Mateo

GETTING together for the first time, these O.R. nurses met in Houston, Texas, recently to make plans for organizing their own association. September 27 was designated for the first official meeting of a citywide group. The meeting was devoted to the election of officers. The nurses who formed the founding ing group are from left to right: Mrs. Mary Hilda Smith, Jefferson Davis Hospital; Mary Miller, St. Joseph's Infirmary; Ella Wolfer, University of Houston; Mrs. Isabelle Matusek, St. Joseph's Infirmary; Jean Hall, Memorial Hospital; Mrs. Abigail Cavasas, Methodist Hospital; Mrs. Ruth Legrone, Jefferson Davis Hospital; B. Byrd, Memorial Hospital, Joyce Adams, Hermann Hospital; Laverne White, Southern Pacific Hospital; Graycie Cameron, Memorial Hospital; Helen Romeros, Methodist Hospital; Mrs. Velma Hoffman, Hermann Hospital; and Martha Watson, Jefferson Davis Hospital.

CHICAGO SUPERVISORS GET TOGETHER

Discuss Possibility of Forming An O.R. Nurses Discussion Group Under Institution of the First Section of the Illinois State Nurses' Association

• Thirty-one O.R. supervisors in the Chicago area were guests at a dinner June 6 at the Palmer House. The possibility of forming an O.R. Nurses' Group was discussed. Guest speaker of the evening was Miss Edith Hall of New York.

Right: Back row, l. to r.: Edna Prickett, Presbyterian Hospital; Marie Ante, St. Luke's Hospital; Dorothy Schmidt, Billings Clinics; Jeanette Weyer, West Suburban Hospital, Oak Park, Ill.; May Kurose and Caroline Kondo, St. Francis Hospital, Evanston; Helen Vanni, Augustana Hospital; Mary McLaren, Evanston Hospital; Evelyn Owens, Wesley Memorial; Ruth Schroeder, Augustana Hospital. First row, l. to r.: Maryalice Gruesbeck, Cook County; Laurie Orlick, Methodist Hospital, Gary, Ind.; Miss Hall; Vivian Carlson. Illinois Masonic Hospital; Lucille Gaukroger, Cook County; and Kathryn Moor, Methodist Hospital, Gary, Ind.

Left: Back row from left to right: Gertrude Lentz, ORS Nurse, and Margaret Johnson, both of Kenosha (Wis.) Hospital; Rose Weiss, St. Mary's Hospital, Milwaukee; Carl Eickstardt, anesthesiologist, Doctor's Hospital, Milwaukee; Marion Jeske, St. Mary's Hospital, Milwaukee; and Margaret Boschert, ORS, Misercordia Hospital, Milwaukee. First Row: Anne Meinhardt, and Barbara Arnolds, both of St. Joseph's Hospital, Milwaukee; Miss Hall; Antoinette Mazanec, St. Mary's Hospital, Milwaukee; and Esther Tojek, Doctor's Hospital, Milwaukee.

Right: a group from left to right are: front row, Esther Pittman, ORS, Indiana University Medical Center, Indianapolis; Miss Edith Hall, President of the New York Assn. and Laura Lou Richter, ORS, Indiana University Medical Center, Indianapolis; Back row from left to right are; Mildred Thompson, Ass't ORS, St. Francis Hospital; Patricia Convoy, Ass't ORS St. Francis Hospital; Ann Sayles, Ass't ORS, St. Vincent's Hospital; and Wilma Matson, ORS, General Hospital all in Indianapolis.

UNIT I of the Massachusetts Organization of O.R. Nurses held its first regular meeting the 26th of September at Carney Hospital, South Boston. The root of organization took hold at a founders group meeting in May; a meeting to discuss aims of organization was held in June. With the election of officers at this first regular meeting the organization is well on its way.

Sitting for an official picture at the left are: Rita Doyle, Whidden Memorial Hospital, Everrett, secretary; Mrs. Evelyn Ellsworth, N.E. Hospital for Women & Children, president; Julia Boghosian, Malden Hospital, vice president and Ruth Pendleton, N.E. Deaconess Hospital, treasurer. Standing from left to right are: Marion Crane, Newton Wellesley Hospital, second vice president; Doris Clark, Free Hospital for Women, assistant treasurer; Winifred Kelly, Beth Israel Hospital, assistant secretary and Mary E. Cronin, Soldier's Home & Hospital, Chelsea, of the board of directors.

At bottom left, President, Mrs. Ellsworth and Ruth Pendleton (left) chat with the hostess, Sister Blanche, Sister Regina, St. John's Hospital, Lowell and Sister Jane Frances.

Tidewater, Va.

Nurses from Norfolk, Newport News, Portsmouth, Suffolk, Hampton and Kecoughlan, Va., have organized the Association of Operating Room Nurses of Tidewater, Va. Officers of the group are shown at the right. Standing from l. to r. are: Mrs. Elizabeth Gamage, Dixie Hospital, Hampton treasurer; Eloise Caracofe, Elizabeth Bubton Hospital, Newport News, and Irene Chapel, Leigh Memorial Hospital program committee. Sitting from l. to r. are: Sara Ingold, Norfolk General Hospital, president; Mrs. Irene Swink, U. S. Marine Hospital, Norfolk, vice president; Rebecca Dofflemoyer, DePaul Hospital, secretary. The entire group is shown above.

Shreveport, La.

The Association of Operating Room Nurses in Shreveport, La. held a busy first meeting. They elected officers, appointed a committee to work on the constitution and by-laws and agreed to meet the third week of each month. The entire group which met at T. E. Schumpert Memorial Hospital is shown above. At the left, new officers of the group are from l. to r.: Mrs. Iris Norris, Schumpert Hospital, treasurer; Mavis Pate, Shreveport Charity Hospital, vice president; and Elanor Scroggins, Highland Sanitarium, secretary. Seated is the president, Mrs. W. A. Halback, North Louisiana Sanitarium.

Grand Rapids, Mich.

The group of nurses shown at the left met October 20 to discuss formation of an O.R. group in Grand Rapids, Mich. At this initial meeting Hazel Brown was elected temporary chairman and an organization committee was named to make a report on a formal organization. Members of the group are from l. to r. (back row) Therese Kusto, Mary Jane Schneider, Virginia Miller, Mrs. Bernadette Jatel, Miss Vernon, Mrs. Laura McKeough, Patricia Wellbeloved. Bottom row: Miss Colson, Mrs. Lillian Van Horn, Sophia Lugers, Hazel Brown and Josephine Wojtaszek.

West Virginia

A meeting to form a West Virginia chapter of Operating Room Nurses was held October 17 in Charleston with 13 nurses present. A committee was appointed to call a meeting to elect officers. Those attending are shown at the right. Standing from l. to r. are: Mrs. Velma Spradling and Dorothy Walker, Kanawha Valley, Charleston; Virginia Jones and Mrs. Phala McDaniel, Laird Memorial, Montgomery; Mrs. Eloise Bagley and Annabelle Glover, Charleston General; and Alice Blatt, VA Hospital, Huntington; Seated are: Martha Robinette, Logan General, Logan; Ellen Cook, The Staats, Charleston; Evelyn Corkrean, McMillan, Charleston; Edna Smith and Ethel Burdette, Mountain State, Charleston and Mrs. Mary Huffman, Huntington Memorial.

Twin City O. R. Group Celebrates 20th Anniversary

OPERATING Supervisors in the Twin Cities — Minneapolis and St. Paul celebrated twenty years of organization in May. The anniversary meeting was held at Shriner Hospital, Minneapolis. The group had their regular business meeting, elected new officers and voted for a new constitution. The last meeting of the year was a joint meeting with the O. R. Group in St. Cloud, Minn.

Above: Busy at her desk is Miss Cleo Mattson, president of the Twin City O.R. Group and operating supervisor at Northwestern Hospital, Minneapolis. *Right:* **Members of the Twin City O.R. Group for the longest time are from left to right: Adeline Pearson, Swedish Hospital, Minneapolis; Ruth Bersaget, Abbott Hospital, Minneapolis, and Ruth Holmberg, Bethesda Hospital, St. Paul.** *Left:* **From left to right, seated: Catherine Haas, St. Joseph Hospital, St. Paul; Marion Mullen, Northwestern Hospital, Minneapolis; Genevieve Scholtes, University of Minnesota Hospital, Minneapolis; Margrethe Lyngholm, St. Johns Hospital, St. Paul; and Ruth Molin, St. Barnabas Hospital, Minneapolis.**

Standing are, Shirley Danielson, Eitel Hospital; Shirley Kulz, St. Joseph Hospital, and Joan Froemming, Asbury Hospital, all in Minneapolis.

20th ANNIVERSARY FOR O. R. S. GROUP IN TWIN CITIES

By Miss Winifred Schweppe

IT WAS with great interest that the Operating Room Supervisors of the Twin Cities — Minneapolis and St. Paul, Minnesota — read, in "Hospital Topics" of December, 1949, about the organization of Associations of Operating Room Nurses in New York City and Dallas, Texas. The interest was magnified because just such an organization has existed in the Twin Cities since May, 1930. At that time Miss Lois Schaefer, Supervisor of Operating Rooms at Minneapolis General Hospital and Miss Kathryn Reid of St. Barnabas Hospital, Minneapolis, felt the need for assistance in solving the mutual problems of thhe Operating Room Supervisors and conceived the idea for such group action. When the St. Paul supervisors expressed a like need and interest, our organization came into being.

The original objectives of the group were; (1) To promote and maintain a high standard of surgical aseptic technique by standardization of these techniques. (2) To promote and improve the educational program in the Operating Room by stimulating the education of the Supervisory staff and by unifying the student teaching program. (3) To promote friendships in order that they might be helpful to one another.

In order to accomplish these objectives meetings were held once a month at the various hospitals. It was found that meetings on Tuesday afternoon brought out most members. Perhaps this was due to the coffee and — which the hostess hospitals served before the business meeting started. That pick-up stimulated the nurses to greater activity. In the early years of the organization all operating room personnel were invited. This large group created a problem for the hostess hospitals so now membership is limited to the Operating Room Supervisor and her assistant or a substitute. Attendance at the meetings varies from 35 to 52, representing 27 hospitals.

During these years the group has worked and solved many problems. The first one attacked was the one of standardization of sterilization techniques. This was accomplished by first a survey of existing techniques, then a study of them. Next, indicated revisions were made and finally the results were accepted by the staffs of the hospitals. The other problems of the early years were the standardization of terminology, draping, care of rubber gloves, etc.

Since the group recognized the great need for improved teaching in Operating Room techniques, it became affiliated with the Minnesota League of Nursing Education and with the League's assistance has developed an effective and practical teaching program. The Senior Cadet program was especially commendable. A survey of Proficiency Reports for the Operating Room Student was made of eight of the larger training schools in the United States in 1944. This resulted in a "Guide for Proficiency Reports" for the OR service which has been of much value to both student and supervisor.

Two Institutes at the University of Minnesota Center of Continuation Study have been held for the group. The first one, held in 1939, was a three day session with one hundred and ten persons from all over the upper mid-west in attendance. The program of lectures and discussions were conducted by leaders in their fields such as Dr. Ralph Knight in Anesthesiology, Dr. Thomas B. Magath in Surgery, Dr. M. Novak in Bacteriology, Dr. William A. O'Brien in Hospital Economics. and Miss Lucille Petry in Nursing Education. One of the significant outgrowths of the Institute was a recognition of the Operating Room experience in the student's whole nursing experience.

The second Institute, held in 1949, was a five day intensive course on Aseptic Technique by Dr. Carl Walter of Peter Bent Brigham Hospital in Boston. The registration of this group exceded one hundred and twenty-five and was made up of OR personnel from thirteen states and Canada. This Institute was also most successful. We came away from it with a feeling that our "jobs" were even more important than we thought and that our vigilance of asepsis can never relax.

During these last two years, we have worked out many of our more pressing problems. The subjects ranging from new things concerning Surgery such as BioSorb, pHisoderm and other skin antiseptics, suture materials, plastic drapes, the medical-legal responsibility of the OR personnel and Operating Room hazards.

We wish the new Operating Room Supervisor Associations much success and sincerely hope that their meetings will prove as valuable to them as ours have been to us.

For about one year I had been approached by several O.R. supervisors from various hospitals in the state of New Jersey, to form an organization where we could get together and discuss departmental problems and various procedures.

In April, 1948, I sent out letters to all the operating room supervisors in hospitals in the state of New Jersey that had schools of nursing in order to get their reaction to such an organization. The response was unanimously in favor of the idea, and every O.R. supervisor was anxious to get started.

We held our first meeting on December 14, 1949 at The Mountainside Hospital in Montclair, New Jersey, where I am O.R. supervisor. We had sent letters to forty-two supervisors and had an attendance of thirty-five.

We did not elect officers at the first meeting, but decided to have elections at the February meeting.

It was decided at this meeting that membership will include only supervisors and assistant supervisors of the operating room but all operating room nurses may attend the meetings.

It was also decided that the meetings will be held on the second Wednesday of each month at four o'clock.

Meetings will be held each month at the various hospitals in the state.

It was decided to invite all supervisors from every hospital in the state which is a member of the A.H.A.

At present we are contacting the New Jersey League of Nursing Education and also the New Jersey State Nurses' Association in order to find out what the requirements will be in order to gain recognition from one of these organizations.

It is our ambition to make this a very interesting and successful organization.

Sincerely yours, *Kanella T. Phillips, R.N.*

Miss Kanella T. Phillips

They Did It — So Can You!

Reproduced at the left is a letter from Miss Phillips who did the spade work in setting up the organization. Her letter gives the steps she and her associates took: Why not organize a group in your locality? Contact O. R. supervisors and associates in your area and work out details of getting together to solve mutual problems. Response will be forthcoming. We are reproducing in this issue the by-laws of the Dallas Association to aid you in starting your group. Write the Editor of the O. R. Section for suggestions for planning meetings.

Members of the New Jersey O. R. Group

Busy electing officers are: Laura Audelle, Gineviere Semple, Isabel Quinn, Joan Riegel, Ruth Ortmann, Marie Zulauf, and Kanella Phillips.

Above: Members of the New Orleans O. R. Association

● Off to a good start are the Philadelphia Operating Room Supervisors who held their first meeting March 14th at Jefferson Hospital, Philadelphia.

● Officers elected are: left to right, Miss Pauline Young, O.R.S., Hahnemann Hospital, Philadelphia, treasurer; Miss Florence Brown, O.R.S., Temple University Hospital, vice president; Violet Garrett, O.R.S., Jefferson Hospital, Philadelphia, president; and Nancy Hartley, O.R.S. Graduate Hospital, Philadelphia, secretary. In the circle, Miss Edith Dee Hail, O.R.S., New York Polyclinic Medical School and Hospital. Founder of the Association of Operating Room Nurses in New York, she aided the Philadelphia group in their organizational plans and was present at the meeting.

Oakland, Calif.

The recent meeting of the Oakland Association of Operating Room Nurses proved to be a successful and very well attended session. Highlight of the program was

an address by Dr. Harry E. Peters Jr., who spoke on "What the Surgeon Expects of the Operating Room and the Operating Room Nurse". Operating Room Supervisors from the Oakland and San Francisco area attended.

North Carolina District 1 Nurses Form O. R. Group

A GROUP of Nurses met August, 1950, at Memorial Mission Hospital, Asheville, N.C., to discuss plans for an Association of Operating Room Nurses in District #1 of North Carolina. Celeste Mimms was elected temporary chairman and plans were made to set up purposes and aims of the Association among the 14 hospitals in the district.

With excellent representation at the meetings in the months that followed, the group met in January and elected permanent officers. Officers for 1951 are: Celeste Mimms, chairman; Iowa Ebbs, secretary-treasurer; Ruby Barr, program chairman with Delphia Nestell, and Alberta Grimm as assistants.

Central Supply Nurses are included in the group which meets the fourth Wednesday of each month. The last meeting was held at Veterans Hospital, Oteen, N.C. The program consisted in the demonstration of new appliances and equipment such as is shown above.

WATCHING A DEMONSTRATION on the use of new appliances and equipment are from left to right: front row: Ruby Barr, Geraldine Beacham, Celeste Mimms, Margaret Jaris, Catherine Lawhern, Edith Creede, Ruth Dillingham, Louise Dowling and Zelma Peek. Back row: Delphia Nestell, Iowa Ebbs, Helen Titis, Jean Henson, Ailsen Plemmons, Nell Albright, Sarah Wagner and Helen Dillingham.

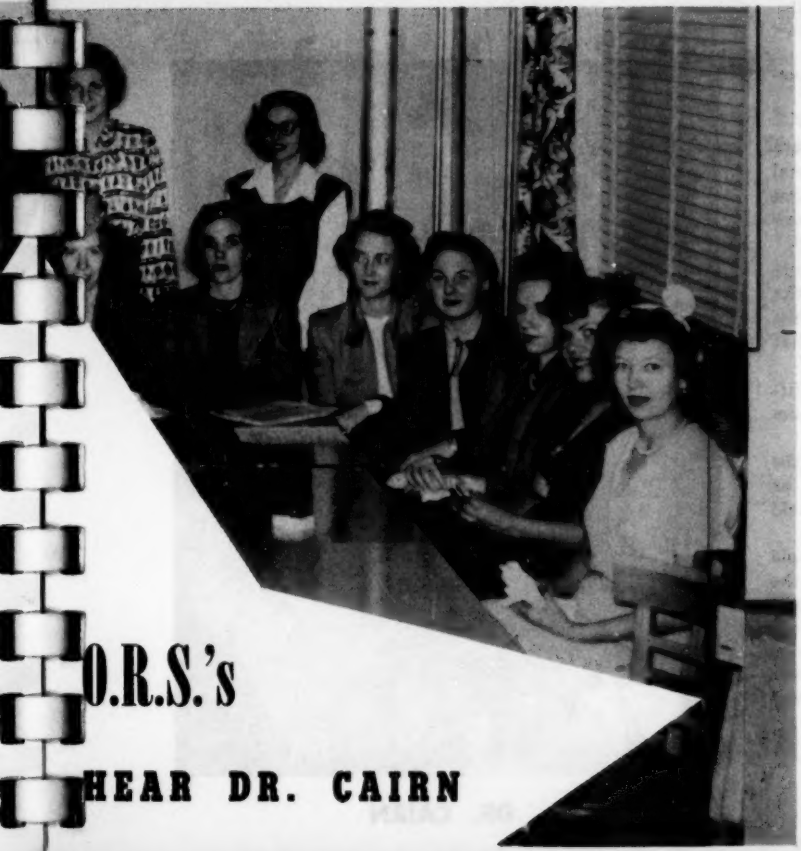
NOTES ON DR. CAIRN'S TALK

The pathologist has more contact with the operating room than any other person in the hospital. He has direct contact by consultation with the surgeons during many procedures and his diagnosis of the tissue sent to him is the final check of the surgeons diagnosis and determines further treatment.

The operating rooms have the age old problem of handling tissues. The method used varies with different hospitals.

The ideal way is to have an ice box in surgery, for care of specimens, until they reach the pathologist. They should be placed in normal saline solution, quantity five times that of the size of tissue. It is very important that the tissue reach the pathologist as near the size, color,

LONE STAR STATE ELECT NEW OFFICERS



O.R.S.'s

HEAR DR. CAIRN

texture, and shape as when removed.

A popular solution used to preserve tissues is formaldehyde. It is a fixature. This method is usually employed in small hospitals and the specimens are taken to the laboratory each day. Being a fixature formaldehyde changes the size, and color of tissues rapidly, and in most places, the gross error is made, of not using enough of the solution to preserve the tissues for a period of 24 hours. In the case of large specimens the tissue should be incised by the resident surgeon in the O. R. and five times the amount of solution as the size of the specimen placed on it immediately, if it is to be stored.

Loss of pathological specimens usually occurs during transmission from the doctor to the nurse. The doctor places it on a sponge, then in haste the sponge is thrown into the trash. This is one of the most important diag-

nostic procedures done, and should have undivided attention.

IDEAL ROUTINE

An ideal routine for all operating rooms is to place a sterile glass jar on every table with plenty of normal saline solution (sterile water is as irritatiing to that tissue as to a cut on your hand). A specimen should never be put into a square of gauze for it is too easily lost.

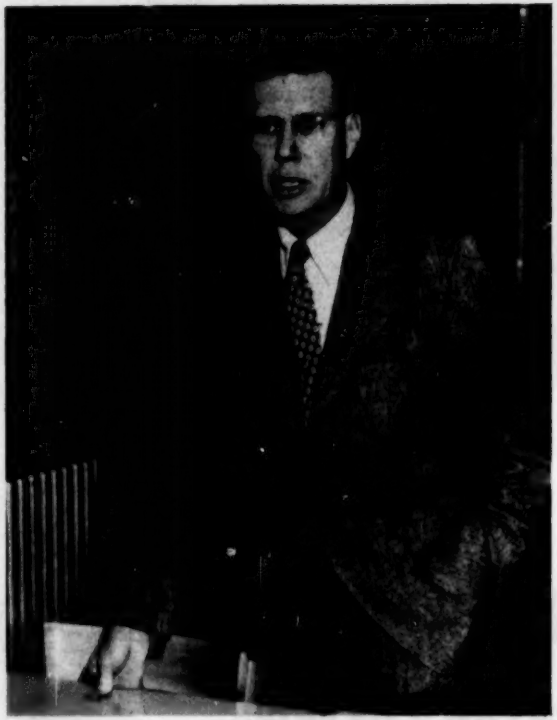
As soon as the jar is removed from the table the circulating nurse should label it with the patient's name, the doctor, the date, chart number, and room number, and take it to whatever place is designated for specimens in that operating room.

The loss of a tissue is parallel to mixing of two different ones. This can happen through poor operating room routine and can have drastic results.

The purpose of taking a culture is to check on the growth of bacteria present in the wound. These must be collected in sterile test tubes (which should be always held at an angle to prevent air contamination).

If a smear and culture are ordered, a requisition should be made. Do not make a smear on a glass side in the O. R. yourself—they can be easily contaminated. Take cultures to the lab immediately.

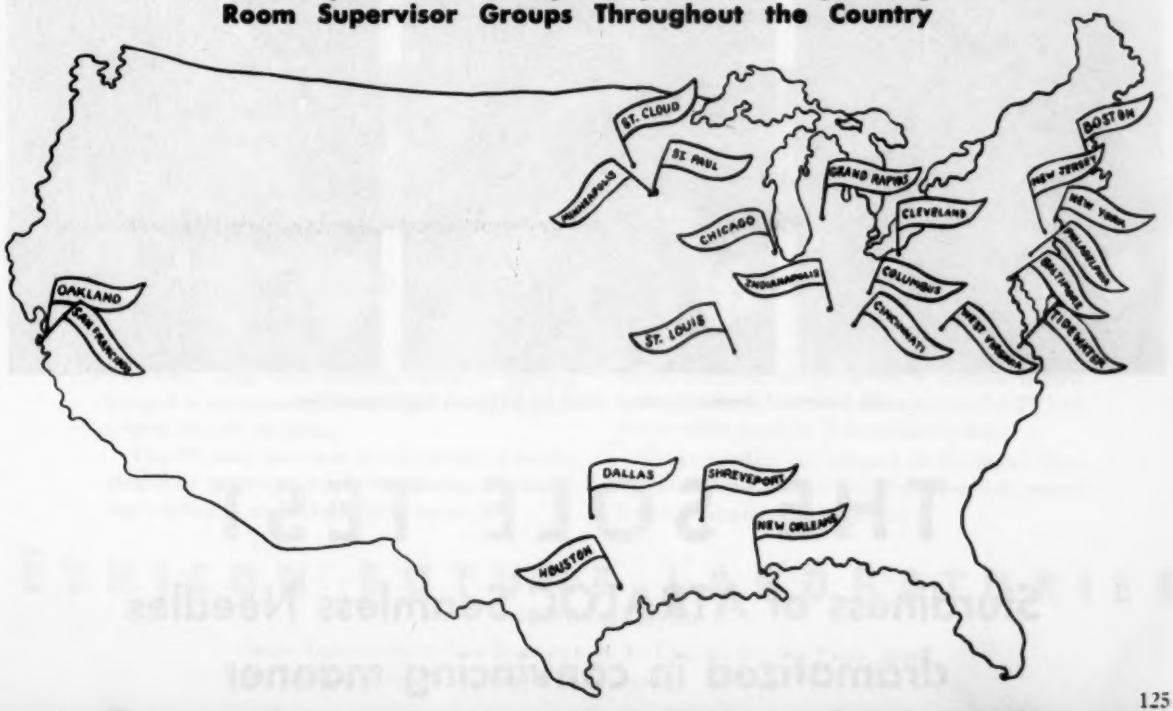
If a culture is ordered at night, the night technician should be called to receive it, unless the operating room is supplied with culture media. If neither is available, ther it should be kept about 98.6° F. Never refrigerate or solutions of any kind on it.

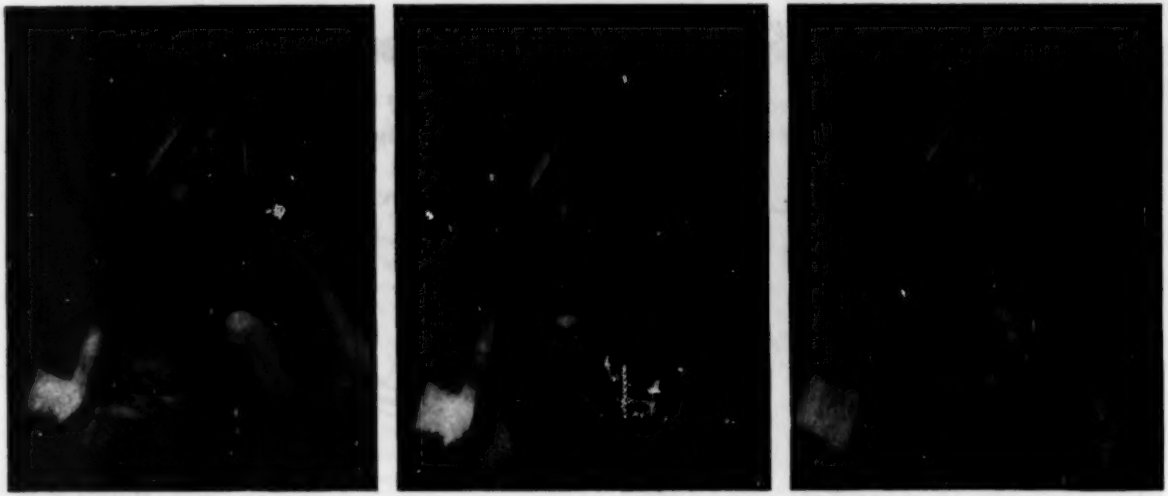


DR. CAIRN

Growth of O.R.S. Groups from Coast to Coast

This Map Shows the Rapid Expansion of Operating Room Supervisor Groups Throughout the Country





An informal demonstration used by Ethicon representatives.

THE SOLE TEST

Sturdiness of ATRALOC Seamless Needles dramatized in convincing manner

Strength without brittleness is accomplished by our exclusive process which retains the even temper of the steel from end to end of the needle. You may use a smaller needle with confidence.

FOR ABDOMINAL CLOSURE

SIX NEW NEEDLES SERVE MOST PURPOSES

For Ob., Gyn. and general closure, sutures swaged to eyeless needles are increasing in preference among surgeons.

The Atraloc *seamless* needle draws a single strand of suture through the tissues, eliminating confusion and minimizing trauma.

After extensive research in surgeon's preferences, Ethicon designed the 6 needles shown above, which meet the requirements for 80% of the needles used in abdominal closure.

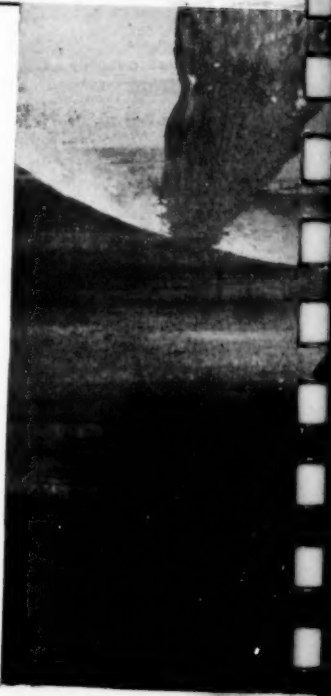
These needles are swaged to Ethicon's Tru-Gauged, Tru-Chromicized Surgical Gut, noted for its strength and flexibility.

ETHICON SUTURE LABORATORIES

INCORPORATED

Suture Laboratories at New Brunswick, N. J.; Chicago, Ill.; Sao Paulo, Brazil; Sydney, Australia. In Edinburgh Scotland

O.

A REGULAR MONTHLY FEATURE OF HOSPITAL TOPICS

R.